RUBBER and PLASTICS WEEKLY

VOLUME 140 NO. 20 MAY 20 1961 ONE SHILLING

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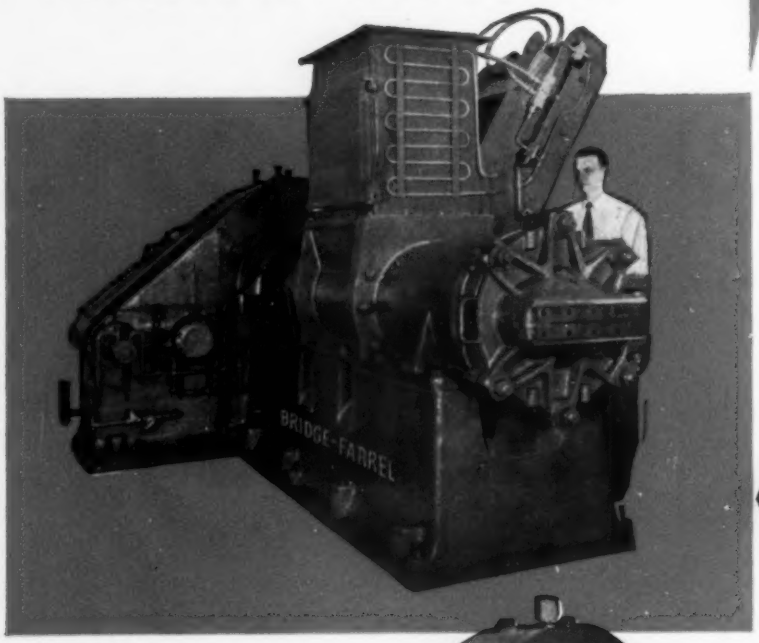

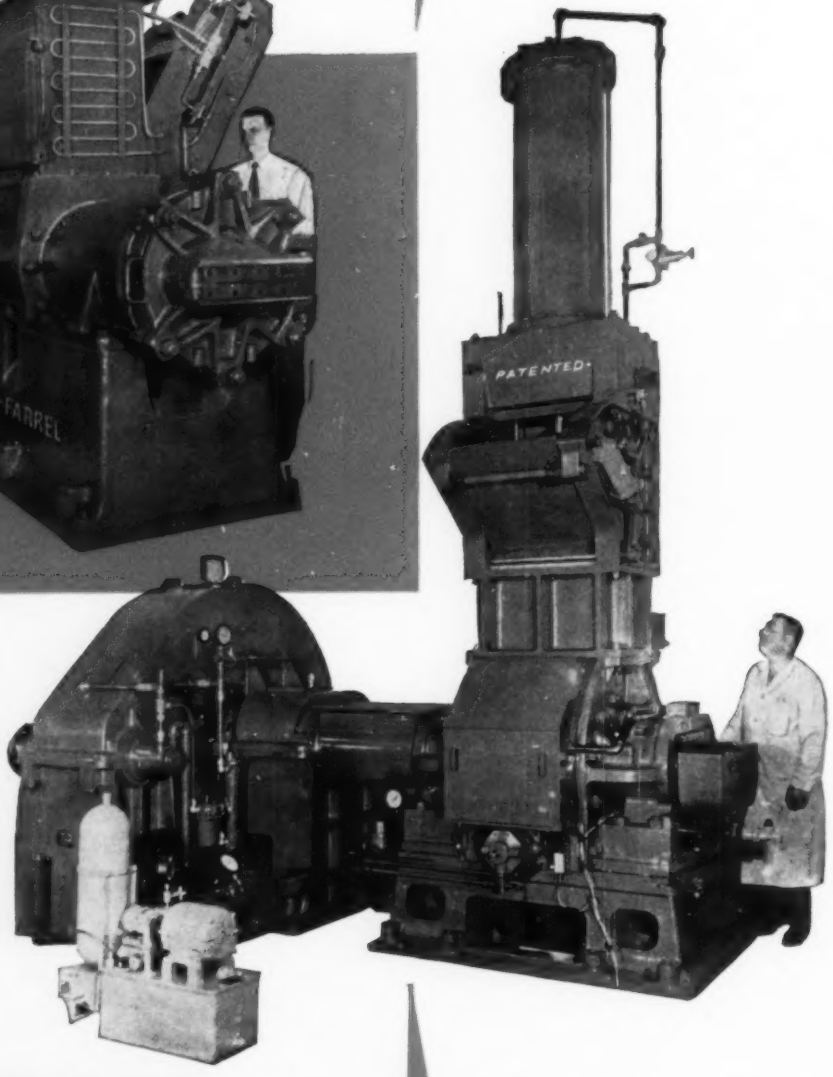

(Illustrated above)

PLASTICS EXTRUDER specially designed to automatically receive and extrude the batch from the BRIDGE-BANBURY MIXER under ideal fully controlled thermal conditions and continuously produce strip or rod form from BANBURY MIXER cycles as low as 2 minutes. Such combinations of machines have been designed and developed for various types of plastics and rubber and are the result of a vast background of experience and factory performance in modern methods of manufacture.

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DEVELOPMENTS in the EVOLUTION of

Magecol 888 BEADS

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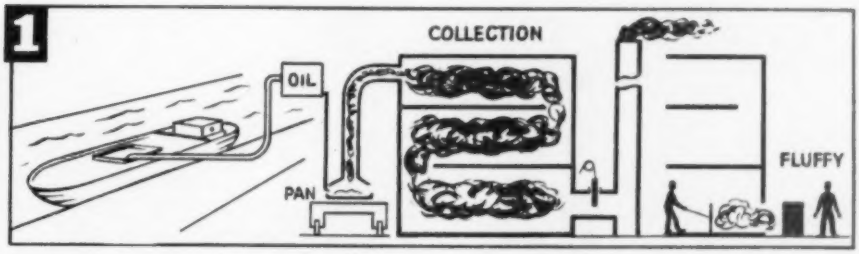
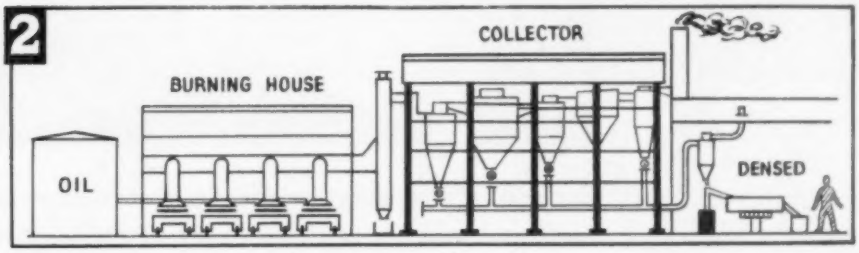
1918-53



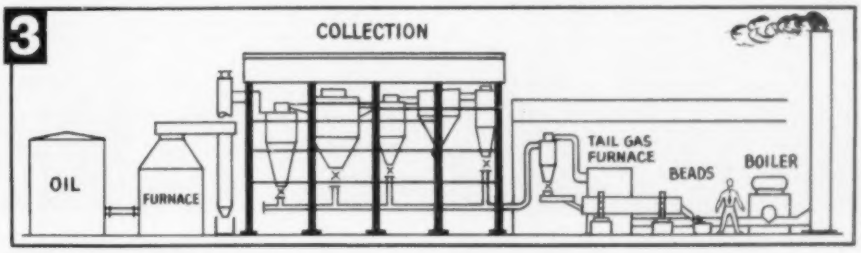
Manufacture began on the site of our present works at Four Ashes in 1918. Coal Tar distillate oils were delivered by canal barge and were burned in a cast-iron pan under a bell-shaped hood. Smoke passed 600 feet through a series of tunnels to be deposited on the floor of a settling chamber. Once each 24 hours the process was halted while men entered the settling chambers to extract and bag the fluffy black in hessian sacks.

1953-57



Early in the '50s the gravity process was abandoned in favour of a modern 8-Pan Collector Unit embodying cyclones and an electrostatic precipitator. Pneumatic Conveyors now carried the product which was, at this point, available as a densed or fluffy powder.

1957



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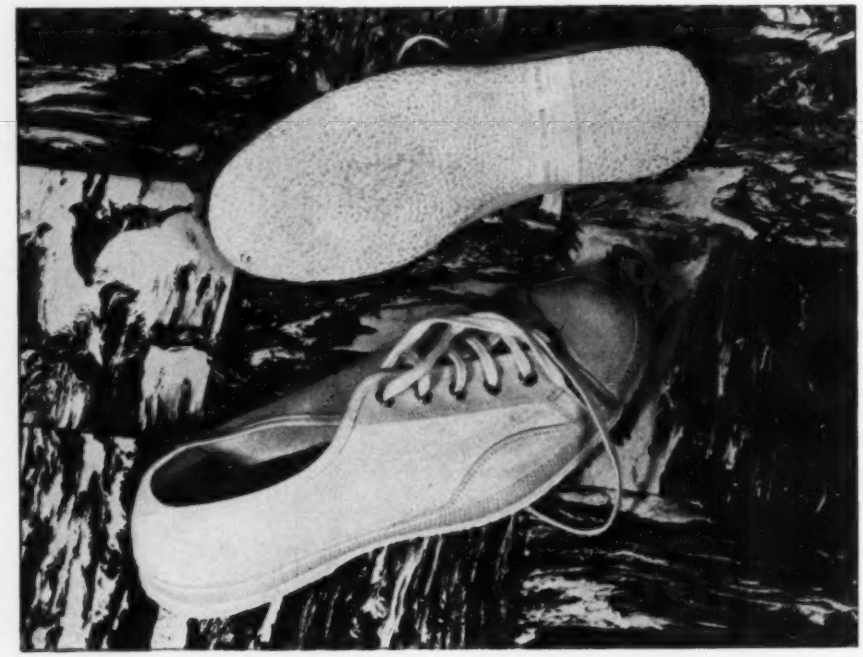

English china clays come into it somewhere. In the thousand and one articles made of rubber that are part of everyday life—rubber soles, floor tiles, bungs and stoppers, sealing strips, cables and belts and a multitude of others—there you will find china clay being used as a reinforcing filler.

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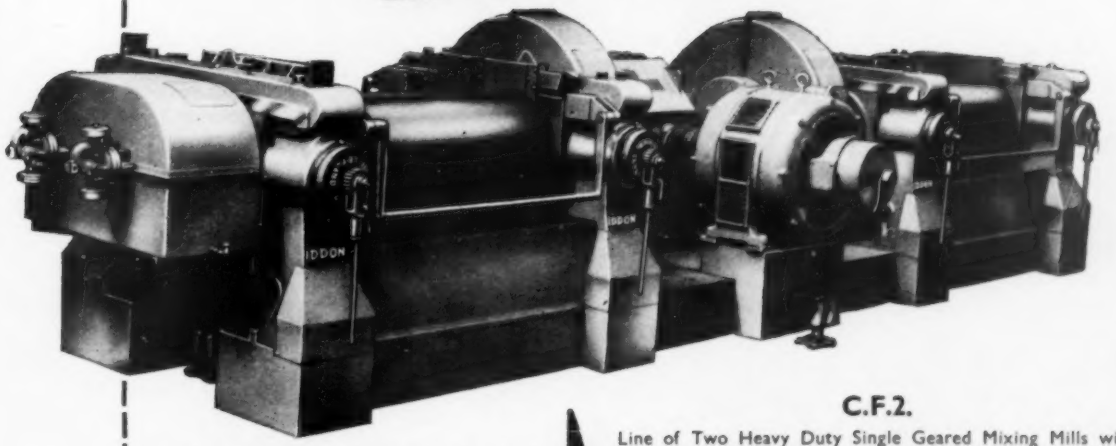

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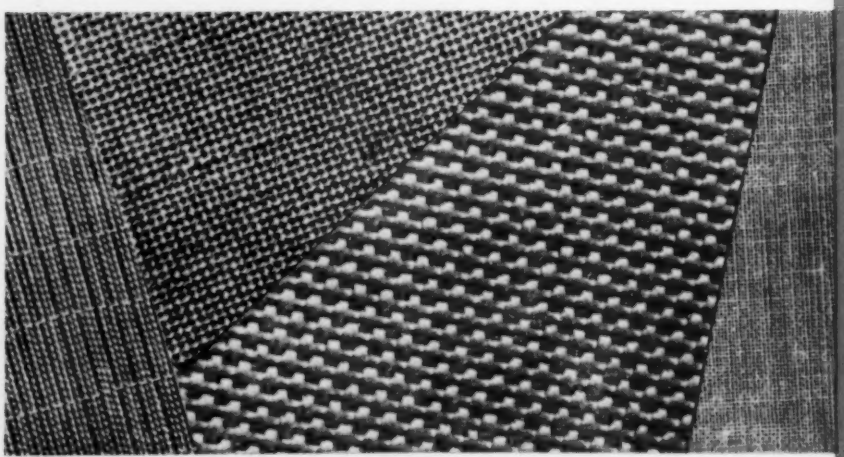

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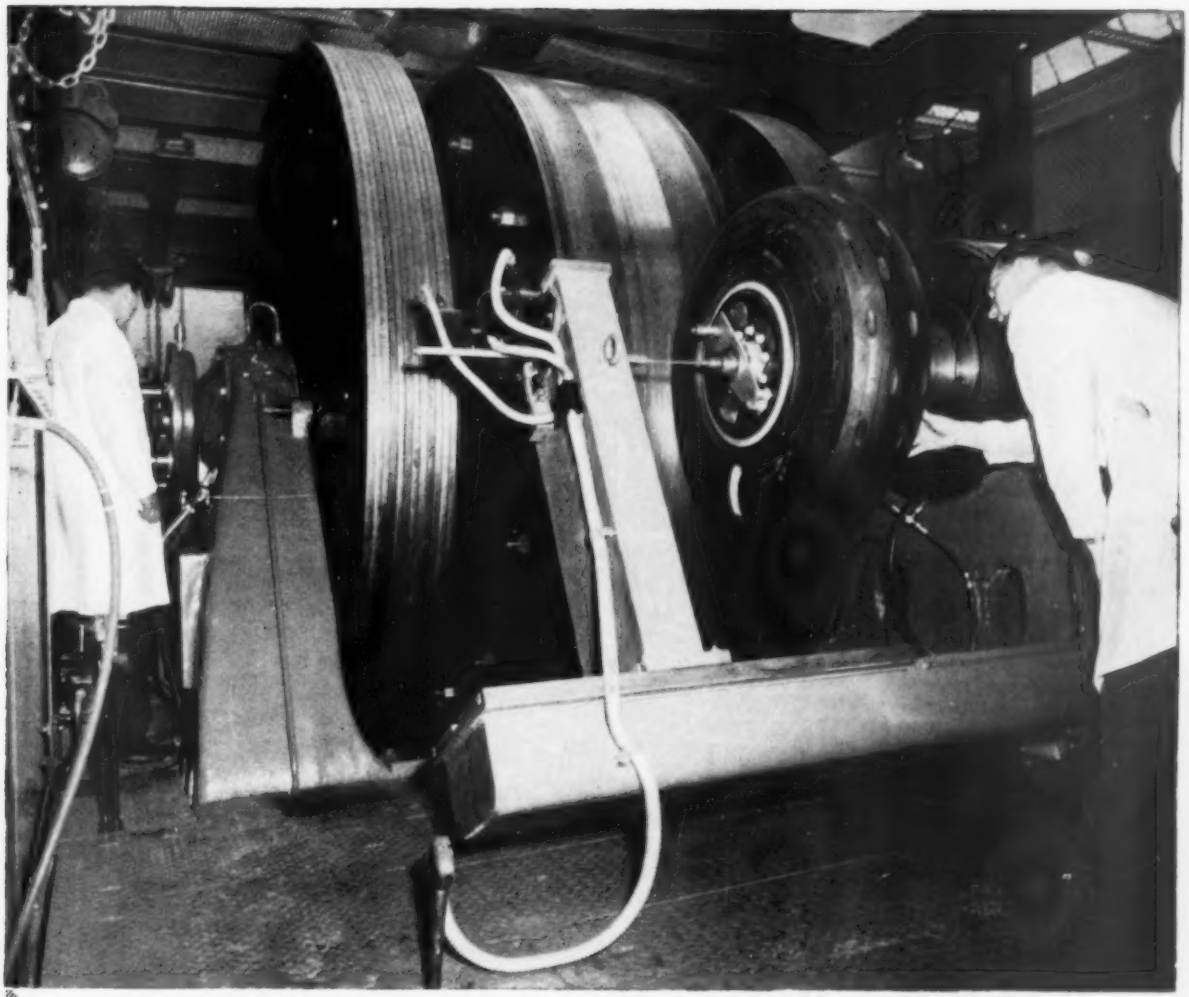

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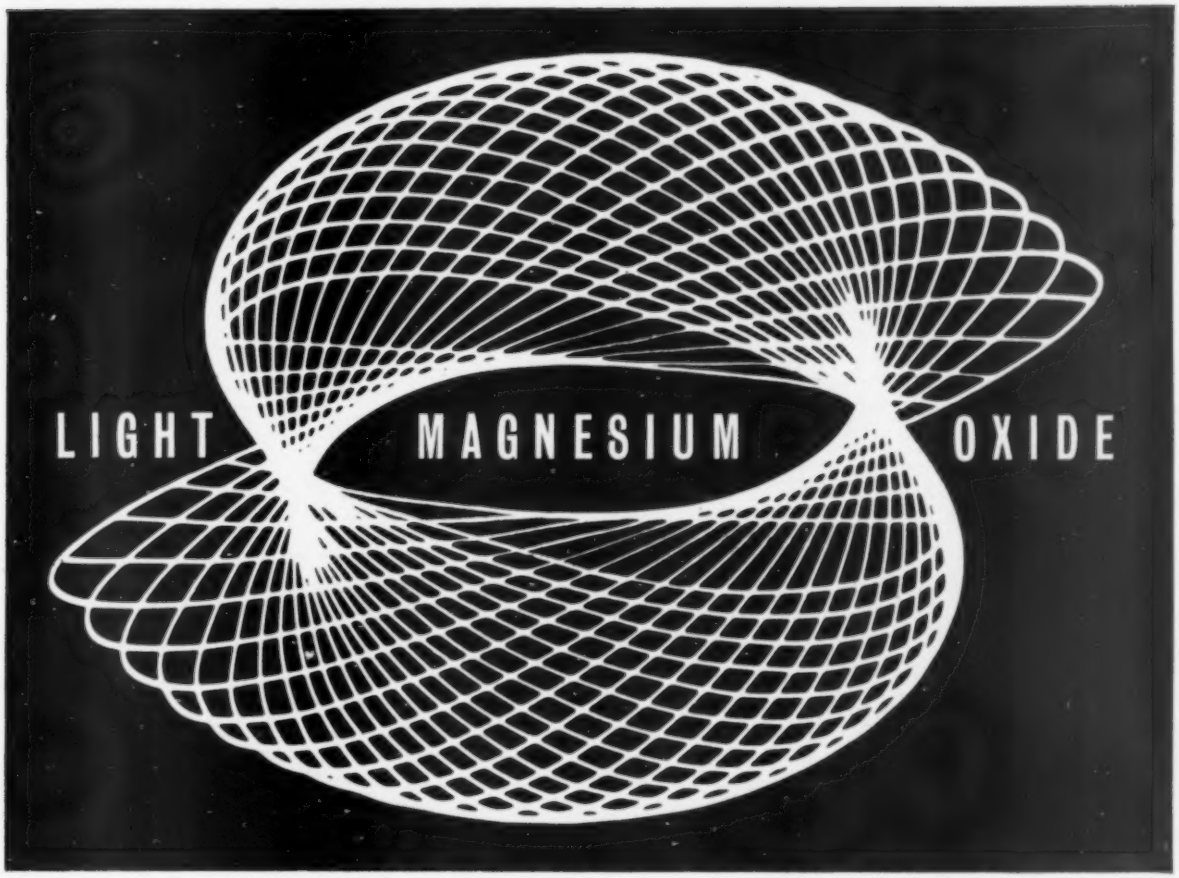

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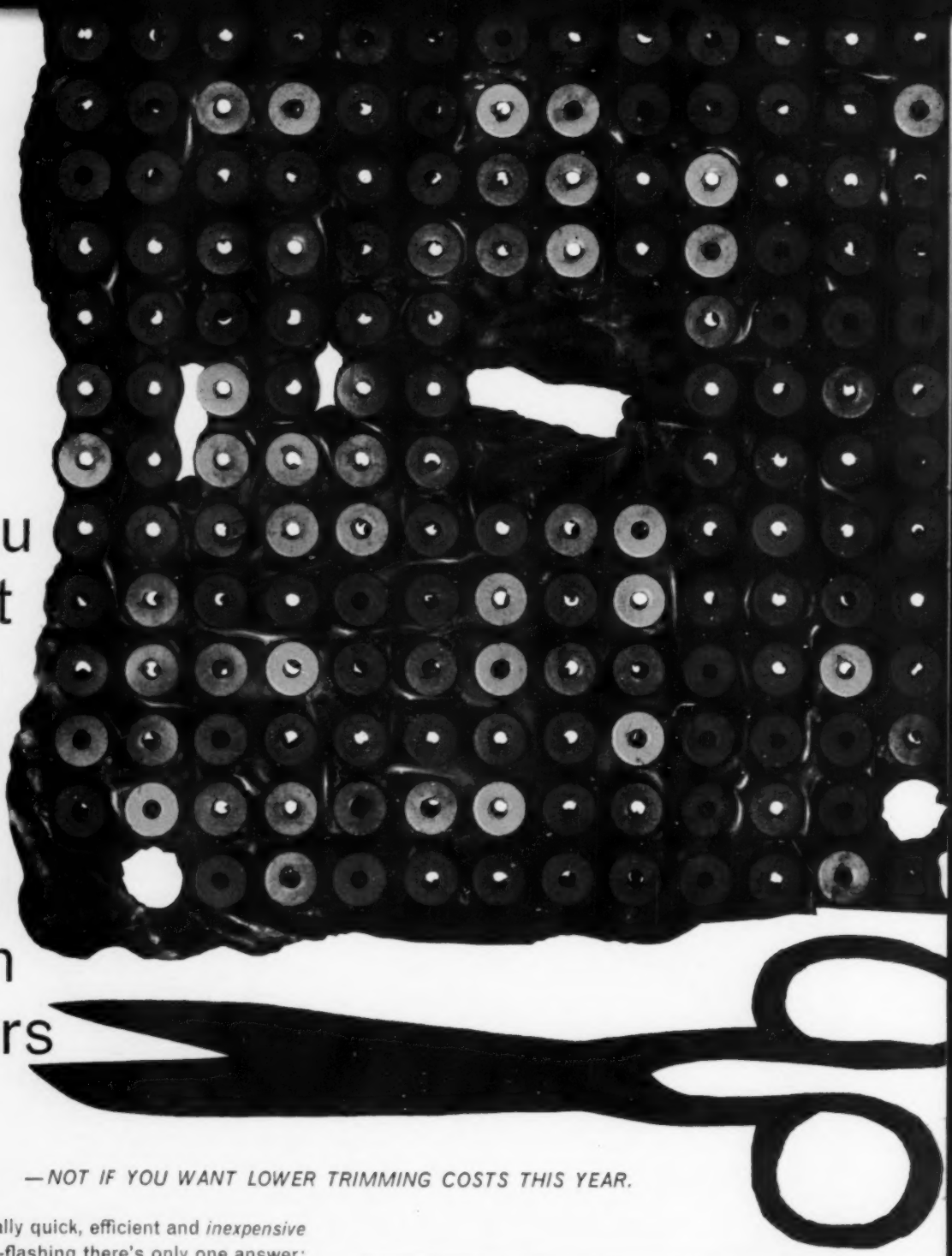

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RUBBER and PLASTICS WEEKLY

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Volume 140 *IN ITS 77th YEAR* **No. 20**

May 20 1961

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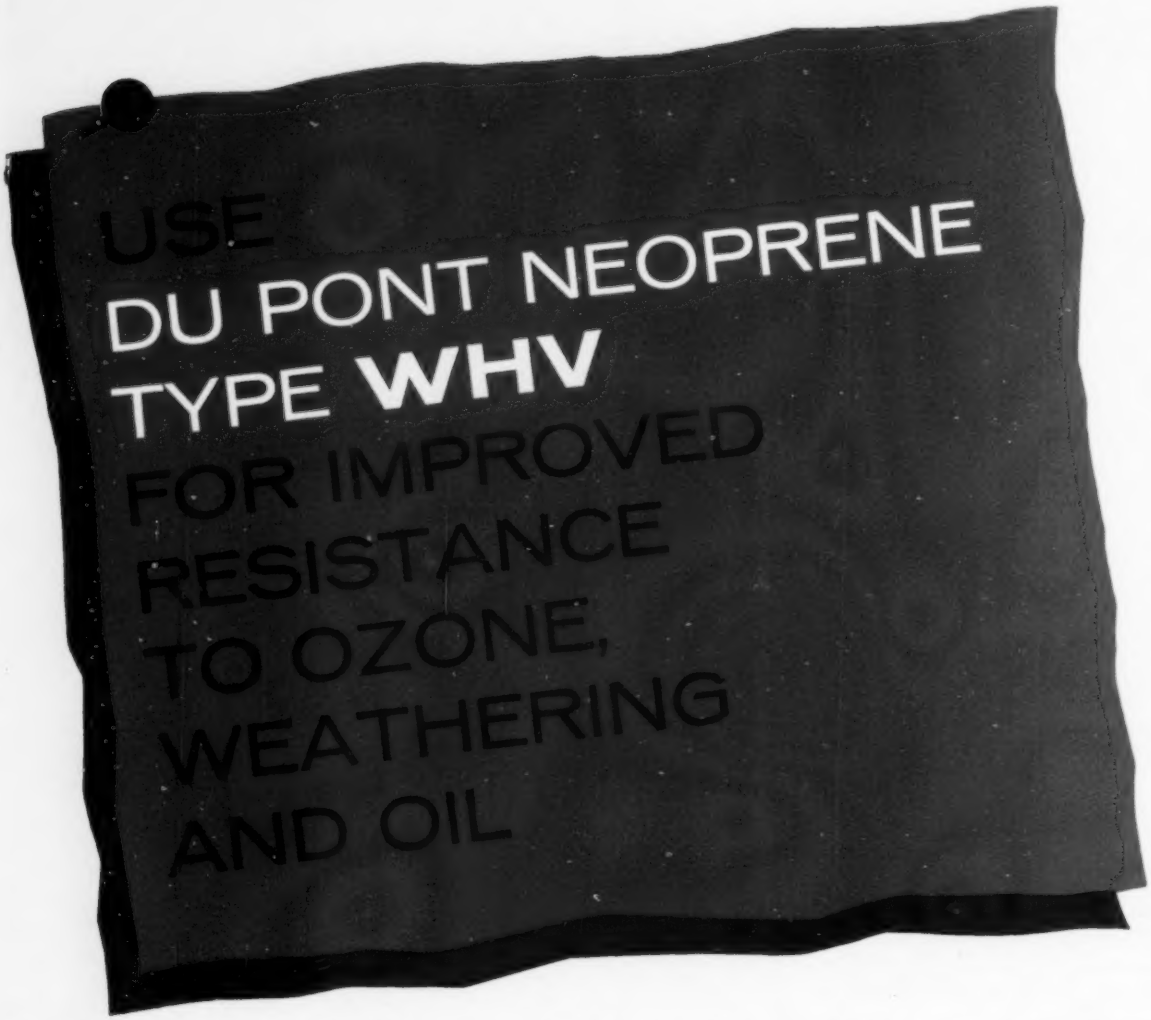

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Rubber and Plastics Weekly 5/61

NOTES of the WEEK

Radiation Vulcanization

THERE are not many rubber symposia which do not contain a paper on the vulcanization of rubber by radiation. Much work has been done on this subject in many laboratories throughout the world and it can, in fact, be said to be the first really new vulcanization method since Goodyear left his piece of rubber and sulphur on a hot stove in 1839.

At present radiation vulcanization is of only laboratory interest: it is ten times more expensive than vulcanization by conventional methods. While radiation-vulcanized natural and general-purpose SBR rubbers are of somewhat poorer quality than their conventional counterparts, some properties, such as abrasion resistance, are said to be improved. Special-purpose rubbers, some of which are difficult to vulcanize by conventional methods, are often greatly improved by radiation vulcanization. Two basic advantages are that the process is rapid and independent of temperature. Experiments have shown that efficient vulcanization is possible even at temperatures as low as —196°C.

A point made by a recent report of the Goodyear radiation research laboratories is that, although research is being carried out with relatively expensive isotopes, such as cobalt 60, it has a real commercial value, since it is a preparation for the future when, in a nuclear power economy, enormous quantities of cheap fission wastes are likely to be available. In fact, when the peaceful use of nuclear energy becomes a widespread reality instead of a remote prospect, rubber chemists will be in the forefront of scientists who will make sure that the nuclear wastes are not wasted.

The Scientist Turned Manager

THE exact role of the scientist in modern industrial management is a difficult one to define. It has been suggested that industry will never make the best use of its scientists if they are to be kept 'on tap but not at the top'. The problem often is, however, that the scientist in such a specialized field as the polymer industry does not have the same opportunity as his commercial colleagues to absorb administrative experience. At a late age the scientist turned manager has to adjust himself to a new outlook, to absorb a new set of skills. As Sir Frederic Hooper has said: '(The problem) lies in losing a first-class technician and gaining a second-rate manager; one, moreover, who may be blind to the fact that he is second-rate and that his change of job implies the acquisition of a whole new range of skills and perhaps even a good deal to unlearn. This risk reaches its peak if the person thus promoted proves unable to put his previous technical status behind him, and cannot refrain from interfering with the technicians under his command on the strength of his past expertize, instead of doing his new job of management. The result of such a situation is that the technician turned manager not only does not do his own job, but that he does not allow his subordinates to do theirs'.

One solution to the problem is to tackle it at source — in the universities. Management studies could be introduced as ancillary subjects, together with short courses on commercial practice. Many educational pundits raise their hands in horror at the thought of introducing a commercial bias into a university syllabus. But what proportion of graduates in chemistry and physics go on to do pure research? By far the greatest number will find themselves in the business world, and, at first, because of the present university syllabus, with no knowledge of business procedure. For example, theoretical yields from a chemical reaction, laboratory yields and commercial yields are three different things. Introducing business procedure into chemistry would consist of amplifying this, and of emphasising that the important symbols LSD are overtly present in every industrial chemical reaction.

Polymer Men in Moscow

THE thoughts (if not the bodies) of many British industrialists will be in Moscow during the rest of this month. The British Trade Fair, which opened yesterday (May 19), is the biggest foreign fair ever to be held in the Soviet Union: over 600 UK companies are taking part in the £2m. exhibition. It is good to see that many polymer firms are taking full advantage of this great occasion. For the past few months publicity managers have been arranging for the shipping of tons of material printed in Russian, and a variety of exhibits, ranging from mixers and injection moulding machines to pvc pipes and conveyor belting — and even red hot-water bottles.

The commercial (if not political) signs are set for a substantial increase in trade with Russia. For example, in March this year the Soviet Union took the biggest single tonnage of plastics raw materials from the UK. Certainly, so far as polymers at least are concerned, if the results of this Fair reflect the efforts that have gone into it, there should be some very happy businessmen returning from Moscow next month.

NEWS *Briefs*

FIRESTONE NYLON FILAMENT — USA AIRWAYS CONTRACT—BELGIAN EXHIBITION—PVC PLANT IN ISRAEL — MODERNIZATION IN NYASALAND

●**United States** — The Firestone Tire and Rubber Co. has announced plans to produce a lofted nylon filament for rugs and carpets at Hopewell, Virginia. The trade name Nyloft has been acquired from the Industrial Rayon Corporation of Cleveland and production is expected to begin in June. This expansion will make Firestone one of the three leading producers of lofted nylon filament with an initial capacity of some 4m. lb.

●**Dominican Republic** — The tyre-retreading firm of Planta de Recauchado, Santiago, is to install equipment to enable the production within the country of all synthetic rubber which the firm requires. The firm was founded in 1951 and now employs 55 workers on all classes of work including large tyres for tractors.

●**Belgium** — Response from potential exhibitors at the Europlastica exhibition to be held in Ghent from June 16-25 has so far produced entries from 459 firms. Most Western European countries will be represented, as well as USA, Canada, Japan and Brazil. French participation is particularly good and a national prestige pavilion is to be erected.

●**Colombia** — Construction of a plant to produce phthalic anhydride and plasticizers will start soon near Bogota. This plant is to be built by W. R. Grace and Co. and will also produce naphthalene, creosote and pitch, products now manufactured by the company at Carboquimica.

●**Nyasaland** — It is reported that the factory at the Vizara Rubber Estate near Nkata Bay, Nyasaland, is to be modernized at a cost of about £12,000 to boost output to 200 tons of rubber annually. At present only crepe rubber is produced at the factory but plans are understood to be in hand for the production of smoked-sheet.

●**United States** — A contract has been signed by Boeing Airplane Co. and B. F. Goodrich Aviation Products for the supply of wheels and brakes for Boeing's new 727 jet transport. Flight tests scheduled to start in the third quarter of 1962 are expected to qualify and certify BFG wheels and brakes for that model in commercial airline service. The Boeing 727 is described as a short haul jet transport. It will have seating capacity for from 70 to 114 and is designed for limited-range flights or through-stop service on longer stage lengths.

●**India** — Mysore Sugar Co. Ltd. has received permission from the Central Government for the manufacture of cellulose acetate flake for films and moulding powders at Mandya, based on power alcohol produced by the company. Negotiations with foreign collaborators have reached an advanced stage and it is expected that the total outlay on the project will be about £2.6m.

●**Israel** — A £1.2m. pvc plant, with a daily capacity of 10-12 tons, is to be built near Haifa by Electrochemical Industries (Frutarom), of Acre, with the assistance of foreign groups. A sum of about £250,000 has already been made available by a private group of US investors; a similar sum will be raised by the company, and the balance will be supplied by the Israel Government as a long-term loan. Know-how and engineering services will be provided by an unnamed foreign company.

●**South Africa** — The Economic Affairs Minister for South Africa, Dr Nicolass Diederichs announced recently in a statement the list of consumer goods imports which are being placed on the restricted list. The list includes industrial tyres and tyre materials. Dr Diederichs said importers who specialized in any of the goods mentioned would receive special treatment on the merits of each case.

●**India** — The Government of India has granted two licences, one each for the manufacture of general-purpose synthetic rubber and of cis-1-4 polybutadiene. The synthetic rubber plant, with an annual capacity of 30,000 tons, will be set up at Bareilly. The polybutadiene manufacturing plant with an annual capacity of 20,000 tons, will be established in Assam. It is also proposed to manufacture about 15,000 tons of reclaimed rubber in the country by the end of the Third Plan period.

●**Australia** — Dunlop Rubber Australia has diversified its activities with the reported take-over, for £A750,000, of four proprietary companies engaged in the manufacture of mattresses, bedding, and footwear. It has also linked with Olympic Consolidated Industries and Ralph McKay in a new company to make truck wheels and rims.

'On the contrary, I doubt if you yet fully appreciate the far reaching effects of oxidation on rubber!'—537

ISR Export Drive

MOBILE EXHIBITIONS TO TOUR THE WORLD

IMPRESSIVE plans to further its already considerable export trade (17,000 tons in 1960) have been made by the International Synthetic Rubber Co. Ltd., of Hythe, Southampton. At a conference of the company's European agents last week a compact exhibition was shown which can be fitted into a case 6ft. x 4ft. x 3ft. and yet expanded to a display covering 300 sq. ft.

The company is also participating in the British Trade Fair which opened in Moscow yesterday (May 19). A report on some UK polymer firms at Moscow appears on page 766.

Part of one of ISR's travelling exhibitions. The display panels, which can cover 300 sq. ft., can be packed into the box visible in the picture

It consists of eight units connected by lighting columns, which can be used together or independently. On each unit photographs and charts have been laminated over Hardec board. The copy panels have been prepared in five different languages so that, by the removal of the English captions and insertion of the foreign copy, the whole exhibition can quickly become French, German or Swedish, etc. as required. The total weight of the packing case and contents when fully loaded is only 7cwt.

Intol Slogan

The main theme of the exhibition is 'Intol is Everywhere'. This slogan has been translated into eight languages, each unit carrying the message in one or other of these languages. 'The overall effect', the company says, 'is that, wherever the exhibition may be held, the main copy will be in the language of that country, but the casual visitor from any other country will at least be able to recognize the main theme of the exhibition in his own language'.

The company intend that displays of this type will be on constant tour around the world, either accompanied by ISR representatives or agents, or as a more or less permanent exhibition at various places of interest.

**ISR has been awarded a Diploma for the best series of industrial advertisements in Sweden in 1960. This follows the English Layton advertising award gained earlier this year for the same series — 'Stretch, squeeze, bounce' — which appeared in publications, including RPW, last year.*

NETLON DEVELOPMENT

Netlon thermoplastic mesh, made by Spicers Ltd., is now available in sheet form in widths up to 50in. Previously it was restricted to a maximum width of 12in. and in a lay-flat or tubular form. The new sheet widths will be available on rolls of 50yd. in all flexible and semi-rigid meshes.

The mesh is integrally extruded and is a very versatile product. Already it is established as an efficient prepacking material and many other industries have found important uses for Netlon including the motor, building, clothing and electronics industries.

More Versatility

The new development which produces Netlon in sheet form should greatly increase its versatility, and open many new fields for its application in commerce and industry. Already the millinery trade has expressed considerable interest in the new material, and horticultural applications are increasing. Netlon can be made in flexible and semi-rigid form, from high or low density polythene, plasticized pvc or polypropylene, and is available in a wide range of mesh sizes, and filament thicknesses. It is light, strong, sympathetic to touch and easily cleaned, and has the added advantages of being corrosion resistant, non-toxic and odourless.

Con‡our Sealing Polythene

NEW METHOD DEVELOPED BY BX PLASTICS

A NEW method for the contour sealing of polythene film, by which it is claimed that up to 50 thicknesses of layflat tubing can be cut and heat sealed in one operation, has been developed.

BX Plastics Ltd., manufacturers of Bexthene polythene film, have developed the machine, which is said to be particularly suitable for use with low and medium density polythene films.

The contour sealing device which has been used experimentally, consists essentially of a heated cutting disc which may be heated electrically, by a flame or by friction. This disc rotates at high speed and is guided as required. No templates are required and the seals produced are strong. The layflat is interleaved with tissue and the shapes are separated after sealing by removing the interleaves.

The machine costs only £100 and the method has the advantages of low cost and versatility. Tools need not be made specially for different jobs and short runs are economical. While curves are more easily produced than sharp angles, a wide range of patterns is possible.

It is anticipated that contour sealing will be of interest to manufacturers of a wide range of products including rainwear, machine covers, shaped packs, balloons and other fancy goods.

BIPEL in the Coliseum

BIP Engineering Ltd. is showing machines at the US National Plastics Exposition in New York from June 5-9: 4/6oz. injection machine; 80 and 20 ton fully automatic machines and 70 ton Pelleter.

On the stand in the Coliseum, New York, will be F. E. Mills, managing director of BIP Engineering Ltd., and D. A. Francis, works manager of the Streetly factory.

Expendable Pallets

CABOT CARBON BLACK PACKAGING

CABOT Carbon Ltd. have recently introduced an expendable pallet for all their grades of British-produced carbon black. This method of delivery is available at no extra cost to the buyer and companies already operating fork lift trucks to handle raw materials at their works will enjoy the labour savings which result from mechanized handling without the expense of providing their own wooden pallets and the need to account for these and repair them from time to time.

The pallet is easily handled by a fork lift truck

This expendable pallet system consists of a unitized stack of bags supported upon a fibreboard base plate to the underside of which are glued three rows of three compressed paper reels 4in. in diameter and 5in. high. The strength and stability of the pallet load results from the fact that the lowest layer of bags is glued to the fibreboard base, and succeeding layers glued to this first layer and to their neighbours. The result is a remarkably rigid unitized load of bags supported on nine reels so spaced that a fork lift truck may enter from any side and easily lift and move the pallet and its load.

The number of 50lb. bags comprising a pallet load depends upon the type of bag packing preferred by the individual user. If standard unpressed bags are specified, the pallet load comprises ten layers each of four bags plus two bags inserted vertically into the centre space, giving a total load of 2,100lb. of carbon black.

When roller-shaped 50lb. bags are acceptable the pallet load is then 48 bags stacked in 12 layers of four and giving a load of 2,400lb. of carbon black. When standard bags are employed the overall pallet height is 5ft., and slightly less than this when roller-shaped bags are used.

The glue used is intended to provide adequate adhesion bag-to-bag or bag-to-pallet base during transit and storage, but at the same time permit the easy removal of a bag from the load by giving it a sharp upward tug at one end. This breaks the glue but does not tear the bag.

The pallet has been designed with the object of providing a palletized load capable of withstanding a journey by road from Cabot's Stanlow plant to the user's factory, unloading there by fork lift truck, removal to and storage in his warehouse, and finally, re-delivery to the mixing station in his works. With reasonably sympathetic handling by the stacker truck driver, the pallet has proved itself well able to fulfil this function.

When necessary, expendable pallet loads may be double-stacked in storage, but when this is done it is recommended that a discarded fibreboard base plate be put on top of the lower stack so as to provide better support for the nine reels of the upper load.

Chemical Industry Planning

The heavy organic chemicals group of the Society of Chemical Industry is holding its annual general meeting at the society's headquarters at 14 Belgrave Square, S.W.1, at 6 p.m. on May 26.

Although the actual meeting is restricted to group members only, visitors will be welcome to attend the address which will follow at about 6.30. This will be given by the retiring chairman, Dr M. A. Matthews of Shell International Chemical Co. Ltd., and will be on planning in the heavy organic chemicals industry.

Minister to open Interplas

Interplas 61, the sixth International Plastics Exhibition and Convention, which begins at Olympia on June 21, will be officially opened on that date at 12 noon by Lord Hailsham, the Minister for Science. After the opening ceremony he will make a tour of the exhibition.

Novadel Expand

NEW OFFICE BLOCK OPENED

THE new office block which was opened at the Gillingham factory of Novadel Ltd. recently, provides an indication of the rapidly expanding growth of the company as suppliers of raw materials to the plastics, paint and milling industries.

The ceremony was performed by the Mayor of Gillingham, Alderman Hamilton, JP, supported by members of the council and other local officials. All the members of the London staff and employees of the Gillingham factory were guests at the occasion, together with their wives, and there were nearly 400 people present.

Long Service Awards

G. J. L. van der Lande, managing director of the company, said that the expansion had been based to a considerable extent on extremely happy and co-operative relations between management and employees. In endorsement of this comment, long service awards were made by Mr van der Lande to three members of the staff who had been with the firm for 25 years or more.

Redland Consolidate

J. G. Ingram and Son Ltd. and Tuck and Co. Ltd. were taken over by Redland Holdings Group in June 1960. Since that time considerable capital has been spent increasing the size and capacity of their Hainault factory.

This factory and the Hove factory of Redland Engineering Ltd., rubber and plastics mould manufacturers, are now to be closed and their production absorbed by the remaining Redland factories.

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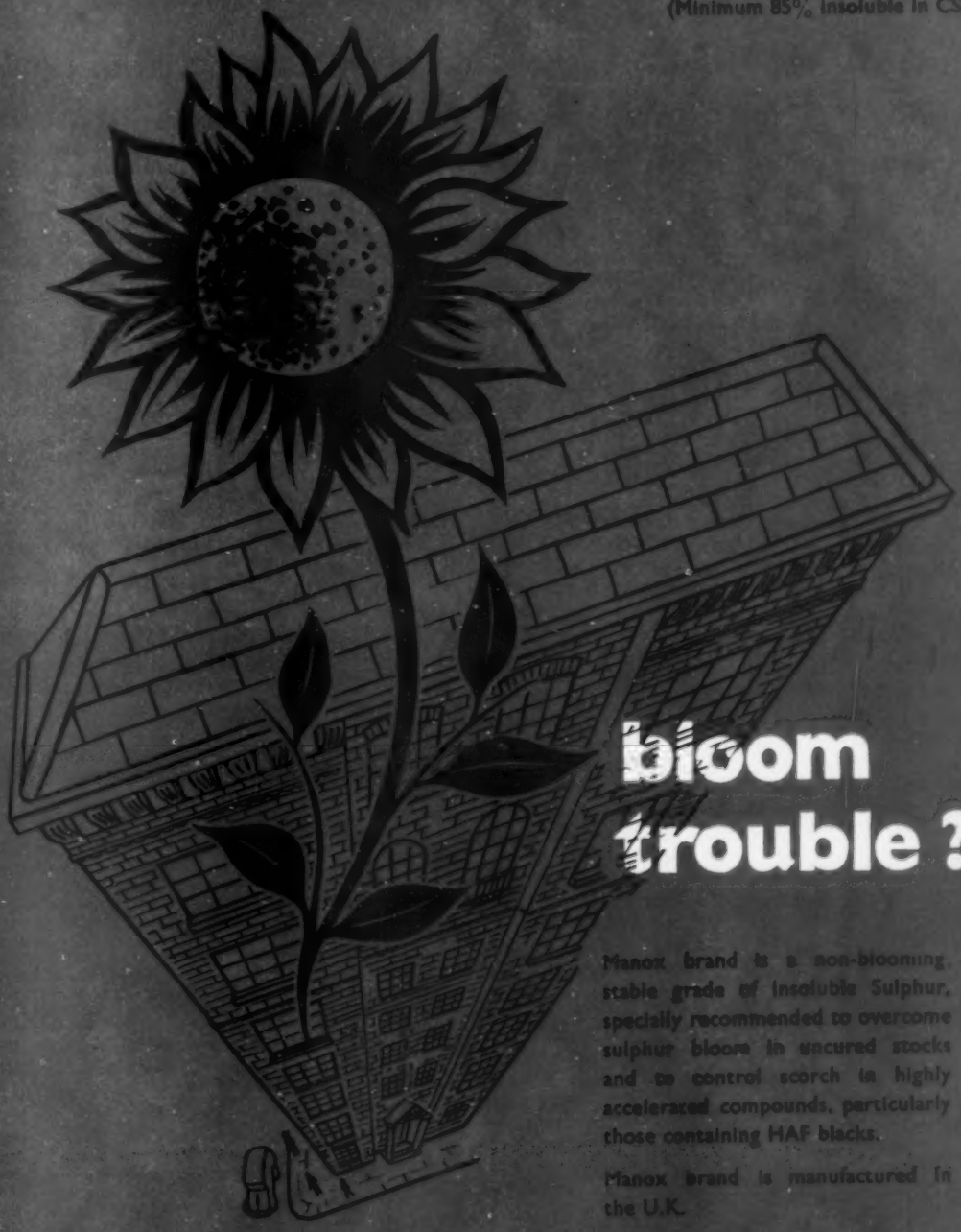

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Oriented Polystyrene for Packaging

MONSANTO PLANS TO DEVELOP SALES TO MANUFACTURING LEVEL

A MAJOR sales drive on biaxially oriented polymers is being initiated by Monsanto Chemicals Ltd. At present the company imports these polymers, which are manufactured under the trade name Polyflex by the Plax Corp. in USA — jointly owned by the Monsanto parent company and the Emhart Manufacturing Co. — but it intends to develop sales to a tonnage which will justify UK manufacture. It is thought that this may take place at the company's Ruabon plant in two years' time.

One grade of Polyflex is manufactured as a non-brittle substitute for glass under the name Polyglaze — a physically modified styrene acrylonitrile. But the greatest potential lies in the development of biaxially oriented polystyrene for packaging applications, and a recent symposium held by Monsanto, at its Fulmer Hall applicational research centre, dealt with this aspect.

Approved for Food

Chemical modification of polystyrene by adding SBR improves its flexibility and impact resistance, but results in some loss of transparency. The manufacture of Polyflex involves physically modifying the extruded polystyrene by stretching it by a factor of three in two directions and then quenching, giving an area nine times that of the original. The amount and rate of stretch, the temperature and the quenching conditions determine the degree of orientation and therefore the physical properties of the final product.

A number of grades are produced for lighting panels, for photographic film base and for glazing. Two grades are being manufactured mainly for packaging: a film grade (thickness .001-.003in.) and a sheet grade (thickness .005-.020). A summary of the properties of these grades is given in Table 1. At present nearly all Polyflex is used in the clear transparent form, although white, brown and yellow formulations have also received the approval of The Food and Drugs Administration.

Vacuum Forming

While it gives the polystyrene improved impact strength, biaxial orientation leads to certain difficulties in vacuum forming. These can, however, be overcome by adjustments to the usual technique. Since the oriented sheet is in a state of strain, on heating it will tend to collapse back to an area one-ninth its size. This means that a higher clamping force than normal with other thermoplastics has to be used, and the clamping should be even right round the frame to prevent localized slipping.

The heating time must be carefully controlled and the vacuum applied just before the sheet begins to 'swim' (*i.e.* to flow outwards from the centre of the sheet). A vacuum of not less than 28in. Hg should be used. There should be a large surge tank connected to the mould box by a large diameter pipe fitted with a quick acting valve. The heater should be left over the sheet while applying the vacuum, since the sheet tends to lose heat very quickly.

TABLE 1
PROPERTIES OF ORIENTED POLYSTYRENE

General:
- Specific gravity: 1.05 — 1.07
- Specific volume: 2.63 — 25.9
- Visible light transmission: 92%
- Ageing characteristics—
  - Indoor: Excellent
  - Outdoor: Limited
- Dimensional stability: Excellent
- Water absorption: 0.04 — 0.06%/24hr.

Mechanical:
- Tensile strength: 9,000 — 12,000lb./sq. in.
- Modulus of elasticity in tension: 450,000 lb./sq. in.
- Elongation: 10%
- Impact strength (Izod): Over 3.0ft./lb./in. of notch
- Hardness (Rockwell): M.80 — M.90
- Orientation release stress: Min. 75lb./sq. in.

Chemical:
- Gas permeability:
  - O_2 213 — 300 c.c./100 sq. in./
  - N_2 42 — 65 24hr./0.001in.
  - CO_2 790 — 926 at 77°F. and
  - Air 62 — 90 1 atmosphere
- Resistance to
  - Weak acids and alkalis: Excellent
  - Strong acids and alkalis: Good—but attacked to some extent by oxidizing acids (chromic, conc. nitric).
  - Organic solvents: Soluble in aromatic or chlorinated hydrocarbons
  - Alcohols: Good
  - Greases and oils: Good resistance to most lubricating oils and vegetable oils. Excellent resistance to most mineral oils

Thermal:
- Thermal expansion (linear): 6.8×10^{-5} in./in./°C.
- Thermal conductivity: 1.9×10^{-4} Cal. sec./sq. cm.
- Heat distortion point: 207 — 210°F.
- Minimum use temperature: Excellent — sub-zero (0.010in. gauge can be bent around ¼in. diameter mandrel at –80°F. without breaking)
- Maximum use temperature—
  - Brief exposure: Up to 200°F.
  - Continuous exposure: 175°F.
- Heat sealing range: 250 — 300°F.
- Inflammability: Slow burning

This Emhart 134 Formatic pressure forming machine can produce a wide variety of articles in oriented polystyrene—and other thermoplastics — at cycling rates of up to 25 a minute, and has a platen area of 99 sq. in.

Pressure Forming

Oriented polystyrene is also well suited to pressure forming, and this method of forming the material is widely used in USA. The sheet is fed automatically from a roll to a position between the mould and the heated platen (see illustration). Com-

Continued on page 754

Scottish Symposium

NEWER IDEAS IN PLASTICS AND RUBBER

A SYMPOSIUM on newer ideas in plastics and rubbers was held on April 14 in the Royal College of Science and Technology, Glasgow, under the joint auspices of the Scottish Sections of the Plastics Institute and the Institution of the Rubber Industry.

The Chairman, Professor P. D. Ritchie, of the Royal College of Science and Technology, in his opening remarks, welcomed the visitors who numbered over 100, including about 60 from south of the border.

M. Cummley, President of the Scottish Section of the Institution of the Rubber Industry, introduced the first speaker, K. J. Brimley (I.C.I., Nobel Division), who delivered a paper on recent developments in silicone rubbers.

Silicones

In his paper, the author traced the development of silicone rubbers and outlined their chemistry and properties. He pointed out the difficulty of a comprehensive study of the field since industrial organizations were, in general, somewhat chary of sharing their secrets. There was also some difficulty in avoiding patent infringement. He pointed out the difficulty of ascribing the advent of silicones to any one man or organization.

The general theme of Mr Brimley's paper was that after a period in which silicone rubber development had concentrated on the improvement of formal physical properties, it appeared that the emphasis had now shifted to processing and fabrication problems. Development of improved mechanicals was still going on but at a slower rate than a few years ago, and it was probably significant that the two most important developments in silicone rubber of the last few years had been the development of cold vulcanizing rubbers and various versions of fusible rubber. These developments did not fundamentally change the character of silicone rubbers but they made important contributions to special fabricating problems.

He suggested that the two greatest break-throughs which were essential in the industry were cheaper manufacture of silicone rubbers, and preparation of high strength silicone rubbers.

One method of attaining the former was to widen the field of application of the material to increase consumption and thus reduce costs to some extent. There was, however, a vast amount of research and development work still to be carried out in the field which would continue for many years.

Nitrile/pvc Blends

The second paper in the morning session was by J. A. Ross and T. J. Sharp (BTR Industries Ltd., Leyland), on 'Pvc/Nitrile Rubber'.

The theme of this paper was that the vulcanization of suitable blends of pvc and nitrile rubber gave products with excellent properties for many purposes.

The speaker dealt mainly with vulcanizable blends of the polymers in which nitrile rubber was the major component and listed the advantages and disadvantages of the addition of pvc. These were: improvement in weather and ozone-resistance, tensile and modulus properties, cost, solvent resistance, extension, calendering, and shape-retaining properties; impairment in Mooney viscosity, low temperature flexibility, compression set and resilience at room temperature.

The preparation of the material was then described, the speaker dwelling at some length on operating conditions and comparing the properties of the products obtained from raw materials derived from different sources (*e.g.* pre-blends and solid nitrile rubber and pvc). He also dealt with the effect of various fillers, etc.

Mr Ross produced graphs and tables to illustrate the effect of various amounts of pvc on the final product and concluded by mentioning some of the uses of this new material. These included food-belting, high-pressure and fire hose, cables, boots and shoes.

Fibres from Polythene

The afternoon session was opened by L. J. Stubbs, President of the Scottish Section of the Plastics Institute. The first speaker was Dr Schlimme (Chemische Werke Hüls), whose subject was 'Low Pressure Polythene as a Raw Material for Fibre Manufacture'. The author's command of the English language added to an excellent paper. Dr Schlimme described the change in thought which had taken place between the period when polymers were considered as resinous materials to be avoided and the present day when they were resinous materials to be cultivated.

He remarked that the primary condition for a polymer to have good fibre-forming properties was that the constituent molecules must be capable of orientation by stretching in the direction of the fibre axis. Low pressure polythene was therefore eminently suitable for the formation of filaments from this point of view.

The author distinguished between low and high pressure polythene. In general, the former was prepared at below 40 atmospheres pressure and 100°C., and was of high density and high crystallinity (80-90%). The latter was prepared between 500-3,000 atmospheres pressure, at 200°C., and was of low density and low crystallinity (60%).

The main factors on which the processability and suitability for fibre-formation of low pressure (*i.e.* high density) polythene depended were melt index, intrinsic viscosity, crystallization capacity, and molecular weight distribution.

Stabilization was designed to counteract thermal decomposition in the processing stages and photochemical decomposition in sunlight. Points of weakness in the molecule were the hydrogen atoms at the tertiary carbon atoms (produced by branching) and the centres of unsaturation.

Dr Schlimme outlined suitable methods of colouring the material and went on to describe the manufacture of monofils and multifils. This description included an interesting series of photographs showing the entire process.

The main outlets for this new fibre, he said, lay in the fishing-net and rope industries, mainly because of its high tensile strength and abrasion-resistance. Other uses were in acid-resistant filter-cloths, and special grades of paper, dresses, lining material, protective clothing, household textiles and drapery, when mixed with cellulose fibre.

Polypropylene Film

The second paper of the afternoon session was presented by R. A. Rose (British Cellophane Ltd., Bridgwater) on the manufacture and properties of polypropylene film. The

author began by discussing the preparation and properties of polythene film, dwelling at some length on the technology of its fabrication. He described the improvements obtained by the use of low-pressure polythene. He then transferred his attention to polypropylene and discussed its fabrication and properties and compared this new material with polythene.

Mr Rose suggested that the best method of extension of this material was through a linear slot on to a cold roller. The bubble-extension method tended to produce rigid, brittle, opaque material. If the extended material was water-cooled, the water-surface must be very still to ensure uniform film-thickness. Removal of water was also difficult. The temperature of the extension-melt should be 220-270°C. If lower, film clarity was reduced and thickness tended to be too great. If higher than this, a clearer film was obtained but unfortunately thermal degradation occurred rapidly. Roller temperature and take-off speed were also important in the production of a satisfactory material.

The author concluded by discussing the properties of polypropylene and mentioning some of its applications, *e.g.* food-wrappings, insulation tape, as a component of laminates and for many of the purposes for which low pressure polythene could be used.

Polypropylene Sheet

The final lecture of the Symposium was given by K. C. Ford (British Celanese Ltd., London) on the general application of polypropylene sheeting.

Whereas the previous speaker had dealt with polypropylene film of thicknesses of the order of thousandths-of-an-inch, Mr Ford dealt with thick sheet. At present, he said, polypropylene was available in thicknesses of up to ¼in. and in the future this should be capable of being raised to 1in.

Polypropylene has a light, hard surface, excellent temperature and chemical resistance, and was easily cleaned. It was available in the form of T-pieces, angles, channels, etc., and might well in the future replace pvc and stainless steel as a fabrication material.

The author went on to discuss the vacuum-forming of sheeting and described the type of heater which was most satisfactory for this purpose. He also suggested that cast aluminium was the best material for the mould and gave some general advice for the successful operation of the process. The fabrication of polypropylene was also treated at some length, in particular the welding techniques which were available. The author advocated the use of hot-gas welding, using nitrogen at 350-400°C. rather than compressed air, although he did say that the hot-tool technique was suitable for welding short lengths.

A considerable number of points were raised at various question times which were available. There were several interesting discussions and the speakers all displayed a thorough knowledge of their topics.

In his closing speech Professor Ritchie thanked the speakers who had presented papers, the sessional chairmen, and everyone else who had contributed to the undoubted success of the Symposium.

High Speed Tyre

A NEW high-speed tyre, designed to prevent destructive shock waves from building up to the point where they can cause blowouts or other failures, has been developed by B. F. Goodrich Tire Co. for use on police cars and other emergency vehicles.

Measuring the tread temperature of a Highway Patrol tyre that has just been tested for more than a hundred miles at 100mph. The tyre runs 20-25% cooler than ordinary tyres at high speeds

The cord angle in the 4-ply nylon tubeless tyres is claimed to be responsible for eliminating shock waves. Known as the Highway Patrol the new tyres were tested at speeds up to 120mph in temperatures ranging from 84 to 102°F.

To pass rigid requirements laid down by various state highway patrols, the tyres had to survive a 90-mile test-track run at an average speed of at least 115mph and another 4,000 miles at an average speed of 85mph. At the end of the tests they showed no signs of tear, thrown tread rubber, tread separation or weaknesses that could cause blow-outs.

Butler for Gray

Basil Butler Co. Ltd. has been appointed to handle public relations for George E. Gray (Plastics) Ltd.

ORIENTED POLYSTYRENE FOR PACKAGING

Continued from page 752

pressed air (low pressure) blown into the mould cavity forces the sheet against the platen. Then a high pressure (about 150psi) in the opposite direction (on the heated side of the sheet) forces the softened styrene into the mould cavity. The forming chills off automatically, is trimmed from the sheet by a knife edge at the top of the mould and ejected by compressed air.

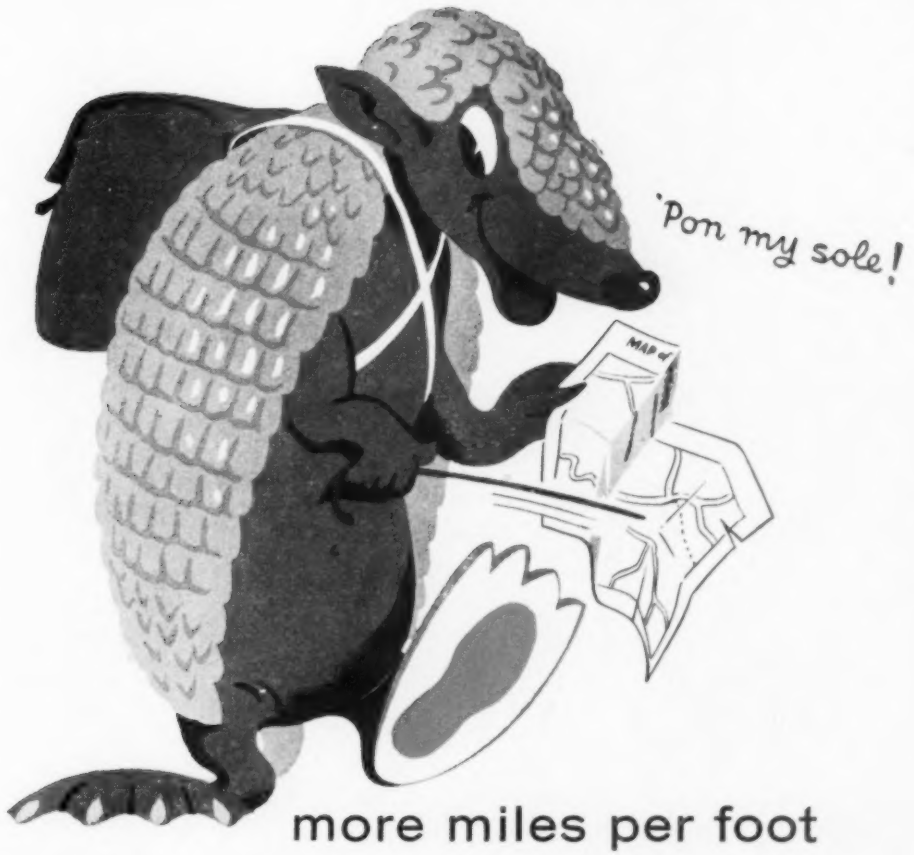
The Emhart Manufacturing Co.'s type 134 Formatic pressure forming machine has a production cycle of five to 25 a minute and a forming area of 9in. x 11in. The maximum draw is 3in. At the moment there are no UK manufacturers of pressure forming equipment, but it is believed that several firms are preparing to bring out models — among them Parnall and Sons Ltd., of Bristol.

Cold Forming

A recently developed method of treating oriented polystyrene is the formation of open-top or closed set-up boxes by folding the material 'in the cold'. One machine is said to be able to convert die-cut blanks into boxes in sizes up to 7in. x 12in. x 15in. at rates that can be as high as 100 a minute, since no heat is applied.

Packaging Applications

The good water vapour transmission rate of oriented polystyrene makes it a 'breathable' film that can be used for packing fresh vegetables, but it is unsuitable for wrapping bread, cakes and biscuits. For the over-wrapping of meat the oxygen transmission rate of the one thou. film is sufficiently high to ensure that the fresh, red colour is retained during display. Another application is in the window carton and envelope field. The thicker gauge sheet material can find a wide outlet in food trays and containers and in blister packaging. The material can be successfully printed (using specially formulated inks) by the usual methods of photogravure, letterpress or silk screen.



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LATEST ADDITION TO THE BICC ORGANIZATION

THE McFadzean laboratory, named after the chairman of British Insulated Callender's Cables Ltd., which was officially opened on Tuesday May 16 by H.R.H. The Duke of Edinburgh, is a six-storey building providing 64,000 sq. ft. of floor space and was erected at a cost of approximately £500,000.

The Wood Lane site, on which the new laboratory block stands, was acquired by the Callenders Cable and Construction Company for extensions to its research facilities in 1931 and was opened in June 1934 by Lord Rutherford. When CCCC amalgamated with the British Insulated Co. in 1945 the Wood Lane laboratories continued as the research centre of the new combine — BICC. Since that time additional plant and accommodation has been provided on the site which now provides employment for almost 400.

The imposing north front and entrance of the new BICC McFadzean laboratory

Vanished Landmark

One landmark which has been removed to make way for the new building was a 210ft. high power station chimney erected in 1899. This was employed for many years for testing vertically installed cables, and was, in fact, being used for experiments on the installation of the 330kV. cables used in the Kariba project right up to the day on which demolition work was started.

One major problem in the manufacture of cables is the provision of some method of continuously testing the product in order that faults may be detected at once to avoid the possibility of long lengths of cable being scrapped.

The instrumentation and control department in the laboratories are engaged on these problems and a variety of instruments has been developed to test different types of cable. The ac spark testing of rubber and plastics cable insulation, for instance, has been standard practice for many years but the use of a dc spark of low energy has advantages. Not least among these are that it is a non-destructive test and is not lethal. A tester has been developed incorporating a novel paper-tape recording device which allows any faults detected to be accurately located.

The continuous vulcanization process used in the production of rubber cables requires large and expensive plant which is quite unsuitable for research and development work. A flash vulcanization unit, which enables fast vulcanizating processes to be studied in the laboratory with ease, speed and economy is in constant use.

Submarine Pipeline

Another device of interest to the rubber and plastics industry is a continuously operating gauge. This is at present being used to check and control the thickness and concentricity of the lead pipe to be used for the flexible submarine pipeline to convey natural gas from the mainland of British Columbia to Vancouver Island. This pipe line (*RPW*, January 7, 14) is lined with high impact pvc reinforced with steel tape on to which the lead sheath is extruded direct.

The majority of the work being done in this new block is more closely allied to the electrical aspects of cable making and separate laboratories elsewhere on the site are devoted to rubbers and plastics and to other well-defined fields of technology.

The sections accommodated in the McFadzean laboratories are the Instrumentation and control department, the physics department, a capacitor research department, the diffraction and microscopy department and in addition the electronic computer, which is an important part of the facilities of the mathematics department. This is at present engaged on laying control tables which will be used for the installation, at the end of May, of the British section of the cross-channel dc power cables for the England-France interconnexion.

Metallized Films

Plastics films have found their way into the capacitor field where vacuum metallized films, thanks to their self-healing characteristics, permit the use of very thin dielectrics and hence make possible a reduction of size of capacitors — an important factor in many applications.

There is a growing field of work in the possible use of plastics for high voltage cables and one possible development is the use of synthetic fibres to replace the oil-impregnated paper used as a dielectric in high voltage cables. A miniature Fourdrinier paper-making machine is in use in the laboratory to study the effects of different paper pulps, pulp treatment processes and paper-making variables. Some experiments have been done with plastics fibres and with glass for the production of paper-like dielectrics, although at present none of these is in use.

The whole building is evidence of the high priority given by BICC to research as a means of ensuring the progressive development of its wide range of products in the service of the electrical engineer all over the world.

present, however, we must confine ourselves to Messrs. Jennens and Bettridge, of Belgrave-square, and Birmingham. The easy chair thus appropriately named was designed by Mr. Fitz Cook, and manufactured in papier maché by the exhibitors. The chair is decorated at the top with two winged thoughts—the one with bird-like pinions, and crowned with roses, representing happy and joyous dreams; the other with leathern bat-like wings—unpleasant and troublesome ones. Behind is displayed Hope, under the figure of the rising sun. The twisted supports of the back are ornamented with the poppy, hearts-ease, convolvulus, and snow-drop, all emblematic of the subject. In front of the seat is a shell, containing the head of a cherub, and on either side of it pleasant and troubled dreams are represented by figures. At the side is seen a figure of Puck lying asleep in a labyrinth of foliage, and holding a branch of poppies in his hand.

The Day Dreamer is a most successful adaptation of this material to an altogether novel design. The same firm also exhibit the Victoria Regia papier maché Cot, designed by J. Bell, sculptor, wrought in gold and colours of emblematical devices. Also the Registered Pianoforte in papier maché (seven-octave cottage), the mechanism by Dimoline, of Bristol—the form and decoration in the Italian style. Papier maché music-stool and Canterbury, *en suite*,—The "Multum in Uno" papier maché loo table, combining chess, draughts, bagatelle tables, &c. Papier maché lady's work-table, of new form, ornamented and appropriately furnished. Provisionally registered.—

THE DAY DREAMER.—JENNENS AND BETTRIDGE.

The Lotus Work-table, in papier maché, on an improved principle. Provisionally registered. Papier maché Tête-à-tête Chaise Lounge, ornamented with acanthus in white and gold. Bachelor's side-board, on a new principle. An inkstand, with group of deer and hounds, designed by H. M'Carthy, sculptor; and other elegant articles.

The exhibitors' patent process of inlaying mother-of-pearl, consists in pencilling the proposed design upon the piece of pearl, in a vehicle adapted to resist acids, and then removing, by acids, the superfluous portions, leaving only those which are pencilled.

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Extrusion Processes

RAPRA SYMPOSIUM ON NATURAL AND SYNTHETIC RUBBERS

THE Rubber and Plastics Research Association held a very successful symposium from May 1-4 on the subject of extrusion of natural and synthetic rubbers.

Again in keeping with previous procedure a number of guest speakers were invited to deliver papers as well as those of the RAPRA staff describing recent developments in the work going on at Shawbury.

The guest speakers included H. C. Baker of the Natural Rubber Producers Research Association, who described the uses and advantages of superior processing rubbers in extrusion. Mr Baker's name is well known in connexion with SP rubber and particularly with PA80, a concentrated form of superior processing rubber, which NRPRA has been largely instrumental in introducing into this country. This has given the factory compounder a unique aid to processing which also forms part of the base elastomeric content of the mix formula.

Machinery Manufacturers

Two papers given by representatives of the rubber machinery manufacturing industry were those on cold feed extrusion by P. Whitaker of Francis Shaw and Co. Ltd., and on pressure roller feed gear for rubber extruders by G. Smart of Fawcett Preston and Co. Ltd.

In cold feed extruders, said Mr Whitaker, the first part of the extruder had to do the work normally done on the mill, and, particularly with tough compounds, this raised the problem of providing adequate horse-power and cooling. The main advantage of the method, he claimed, was the regularity of the extruded section arising from the regular action of the warming or plasticizing section of the extruder as compared with mill warming where the rubber could be left for varying lengths of time on the mill before being extruded. He said that the advantages were likely to have most effect for long runs with a limited range of compounds.

Pressure roller feed gear was described as being a method of ensuring a constant rate of feeding to the extruder, thus helping to eliminate dimensional changes in the finished product. This was of particular importance in such applications as the continuous extrusion and vulcanization of high voltage cable, where a strict diameter control was required, and solid void-free insulation was of vital necessity to avoid corona breakdown.

Extrusion Theory

Other lectures were given on the theory of extrusion, extruding machines themselves, rubbers for extrusion and compounding, continuous vulcanization of extrusions and productivity studies on the extrusion process. The lecture on the theory of extrusion was illustrated by two excellent film sequences showing the behaviour of coloured granules in transparent extruder models, and screw design, continental practice and the use of heavy equipment were described by representatives of the machine manufacturers and critically discussed. It would appear that such improvements and advances as had been made over the last 20 years or so were due to the requirements for plastics, and the opinion was expressed many times that rubber equipment was decades out of date. In the compounding lectures, the use of special synthetics as well as SP rubbers was described and the work of the Research Association on controlling of moisture porosity by means of an added desiccant.

Continuous Processes

Continuous vulcanization of extruded sections such as sealing strip was described, using liquid baths of molten metals, organic liquids and fused salt mixtures; hot air tunnels mainly for silicones; and by fluid bed techniques, where a bed of fluidized solid particles, behaving in many respects as a liquid, has the great advantage of being completely chemically inert and safe, as well as having the good heat transfer properties of a liquid.

Demonstration models of both horizontal and vertical beds were shown as well as extruded sections continuously vulcanized by passage through such beds, and also through a molten eutectic salt mixture. Considering a number of different factors, it was shown that productivity in the normal extrusion process, varied enormously, but one of the limiting factors was the speed of coiling, thus pointing to the desirability of continuous vulcanization, provided a sufficiently long run was required.

Fluid Bed Vulcanization

On the last half-day of the Symposium there was a visit to Russells Rubber Co. Ltd., to view a full-scale horizontal fluid bed built in collaboration with RAPRA staff being used for continuous vulcanization of extrusions. The willingness of the company to share their experience is a very healthy sign in an industry still retarded by secretiveness, not all of which is to the benefit of those imagining that they do really possess a secret process. The company's gesture was much appreciated. This was followed by a visit to the RAPRA laboratories at Shawbury to see a large vertical fluid bed under construction.

Amid this concentration of technical sessions, a lighter note was struck by illustrated talks on a visit to Russia by the Director of RAPRA, and on country house life by the Deputy Warden of Attingham, and also a coach tour of southern Shropshire. Because of the large number of bookings, the Symposium will be repeated later this year, again exclusively for RAPRA members.

Delegates to the symposium on extrusion of natural and synthetic rubbers held by RAPRA at the Shropshire Adult College, Attingham Park

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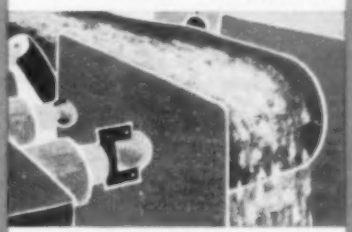
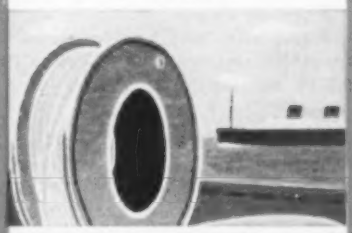


BUTYL FOR HEAVY INDUSTRY

This Butyl-covered conveyor belt at I.C.I., Billingham, has outlasted four ordinary belts and is still going strong.



BUTYL FOR ELECTRICAL INSULATION

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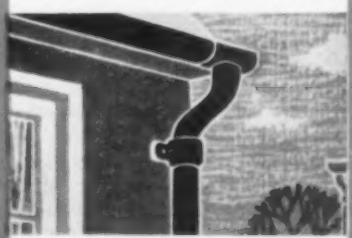

BUTYL FOR BUILDING

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VIEWS and REVIEWS

Plastics in Agriculture

LE Comité d'Etude des Matières Plastiques devoted its annual conference this year to the use of plastics in agriculture, horticulture, and market gardening. It was held in March and is reported in *L'Officiel des Matières Plastiques* for May 1961, Vol. 8, No. 81, pp. 417-420.

The idea was to tell the public how plastics were being used by farmers and market gardeners, and also what technical work was being carried out and the results to date.

The conference was divided into a number of sections addressed by experts. The first was on glasshouses and the 'forcing' of crops. M. Guyot, Professor of Botany at the National School of Agriculture, reported on his comparative studies of the thermal effects of transparent covers. (Why do we, but not the French, call them 'cloches'?) He found that plastics covers caused an increase in both the maximum and the minimum temperature, which, though small in autumn and winter, were quite significant in spring and summer.

M. Cranga, Engineer of the Agricultural Services, reported that his experiments led him to the conclusion that 'from the point of view of thermal isolation, in the case of cultivation in cold frames, most of the plastics which he studied gave protection superior to that given by glass'. This was a theme which recurred often but was not likely to be determined as long as so many failed to define the exact conditions of their experiments or even frequently to name the plastics they used.

M. Brun, Director of the Agricultural Foyer of Hyères, discussed this issue in relation to the raising of flower plants and of melons in Mediterranean areas where intensive cultivation is essential. He favoured plastics.

M. Nisen, Head of Studies at the Belgian Agronomic Institute, after investigations covering three years, found differences in reinforced polyester sheets which he attributed to differences in the materials of the sheets themselves. He advocated the incorporation of UV absorbers to prevent yellowing because it seemed to him that although this would remove all the ultra-violet from the light reaching the plants this was a lesser evil and was preferable to yellowing which caused a significant loss in transparency. He concluded that although glass gave slightly better results, area for area, than plastics, there was ultimately not much difference because the effective area of the glass was reduced by the opaque supports it needed.

Mr Renard, Director of the Institut für Technik in Gartenbau und Landwirtschaft in Hanover, discussing agricultural applications of plastics in Germany, referred to the use of a 'thin plastics sheet, white on the outside and black inside, which was found to be very effective for modifying the photoperiodism of plants and bringing them into flower on a calculated, fixed day'.

Science and Costs

If the picture painted by this report in *L'Officiel des Matières Plastiques* is a true one, the conference seems to have been distinguished by two main features: the primitive, almost unscientific approach to the technical problems, and the altogether praiseworthy concern about costs. Discussion constantly came back to costs, and it appeared that transparent plastics in frames and greenhouses could be from one-quarter to one-tenth the cost of the same thing in glass and wood.

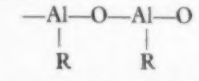
It was striking that in experiments of the kind described so often at the conference, where many factors other than those being ostensibly investigated were operating, there was no mention of a statistical approach to the results or to the planning of the experiments. And it was both unscientific and irritating when authors referred to 'plastics' without further specification, because, one imagines, either they did not know that there were many different plastics, or they did not care.

Plastics were also used, it was reported to the conference, advantageously for silos and flower pots (which, when made of plastics, gave more rapid growth and better roots, yielding earlier and larger plants and flowers) and for water reservoirs and various irrigation devices. The final paper was concerned with the use of plastics films, especially polythene, for packaging particularly during refrigerated storage. The speaker said that by 1965 the saleable tonnage of apples would be doubled by the use of plastics in this way.

The president of the conference, Professor Dubois, drew the conclusions that it had been shown that experimentation in this field was becoming increasingly scientific, and that both the number of uses for plastics in agriculture and of people interested in the subject were increasing. The conference certainly indicated the elementary state of knowledge and of technical approach to improving it.

Inorganic Polymers

By contrast, the work on inorganic polymers has already reached a very advanced and highly technical stage under the pressure of the demand for heat-resistant materials for air- and space-travel. They are discussed in two articles in *L'Officiel des Matières Plastiques* for May 1961, Vol. 8, No. 81. One by S. M. Atlas and H. F. Mark, on pp. 404-9, deals first with the work reported by W. G. Woods on compounds based on aluminium oxide, the polyaluminoxanes:



There follows a discussion of the recent developments of silicon-containing polymers, some with other metals as well. It discusses the work of Adrianov on the polymers triethylsiloxyaluminoxane and the possibilities of stannosiloxanes. The General Electric researches on the copolymers of boron- and silicon-containing radicals have been reported by R. P. Anderson, and these lines of study have led to the widespread investigation, in the USA at least, of derivatives including other metals and non-metals, among which phosphorus is claiming much attention. The paper ends with a brilliant summary of the

COMMENT ON SCIENTIFIC AND INDUSTRIAL MATTERS

by **F. C. JENNINGS**

outstanding papers presented to the Conference on High Temperature Polymers in 1959.

This paper is followed by an account written by H. Gibello of a more recent US conference on the subject with contributions by: E. G. Rochow on cross-linking of cilyls with copper; F. G. R. Gimblett on polyphosphonitrile chloride and its analogous behaviour to molten sulphur; P. R. Bloomfield on the so-called 'PON' resins prepared by the condensation of substituted phosphoramides and containing P—N—P and P—O—P groups.

M. Gibello comes to the conclusion that 'the conference produced several new ideas as to the possibility of preparing new organo-mineral polymers containing silicon, nitrogen, and phosphorus. The work described forms part of a programme of co-operative research which has already produced very important results, even from the practical point of view. For example: the work of Andrianov on the silicones containing metallic elements such as titanium; phenylsilane condensation; Diels-Alder reactions based on vinyl-butadiene; the polymers of dicyan; the ring polymers of acrylonitrile, phthalonitrile, etc.'

Automation

'Automation' is not a word that I like; there is also some doubt as to its meaning. But there should be no doubt of its significance to our industry.

It has been claimed that it is in our industry that there is to be found the largest piece of automated production equipment in the whole of the chemical industry. Largest, that is, when measured in terms of output by weight or volume per hour. I refer to the latest machines for manufacturing polyurethane foam. Everyone who has seen this huge machine, making continuous yards of 'loaves' of this cellular rubber 6ft. wide and approaching 2ft. deep, is impressed. One man appears to be supervising the machine.

But that is only partial automation; it is mainly mechanization, automatic mechanization, perhaps, but automation implies just a little bit more — the integration of several automatic processes.

By integration I mean not only the fitting together of several mechanizations into one controlled system but also the self-regulating of the parts and the whole system.

Automation is not engineering, nor designing, nor technology, nor process control, nor production planning, it is all of them, linked together automatically to give a self-regulating chain of automatic processes, which may stretch from the ordering of the raw materials to the packaging and despatch of the products.

Obviously, one of the essential features of a self-regulating system is a means of continuously observing what is going on, and taking action on the observations to make adjustments when they are needed. It is an interesting exercise to decide whether these conditions are met by the two following examples from the current literature.

Width Control

There are many examples of width control in our industry. A new one is described by H. Zeitler in *Der Plastverarbeiter* for April 1961, Vol. 12, No. 4, pp. 160-1. This is a device for measuring the width of a continuously-produced length of material — in this instance, a flat tube intended for slitting into plastics film.

The apparatus measures the relative position of each edge of the advancing length relative to a common zero, and adds the two values, thus nullifying mere lateral shifts. This is achieved by converting the measured deviation of each edge to proportional air-pressures. The net result can be continuously depicted on a recorder and/or used to control the width by effecting the appropriate changes in the preceding extrusion process.

Dynamic Compression Testing

'The Automation of Goodrich Flexometer Testing' is the title of a paper contributed by A. F. Cody of Enjay Laboratories to the April 1961 issue of *Rubber Age*, Vol. 89, No. 1, pp. 88-91. The Goodrich Flexometer measures the effect of high-frequency compressions on a cylinder of vulcanized rubber; it is a useful instrument but expensive to operate because it demands the constant attention of a skilled operator throughout the test which may last several hours. Cody has automated it and claims that it now requires only 4min. of the operator's time regardless of the duration of the test. The changes in compression and temperature are fully recorded by means of an added linear transducer and potentiometer and a temperature recorder, in addition to which all that need be added to the standard equipment are a small reversible motor for adjusting the position of the sample, a flexible drive shaft, a proximity control unit, a timer, and three safety switches.

Specifications

A valuable contribution made to the progressiveness of the industry is the work of the Federation of British Rubber and Allied Manufacturers in the field of specifications. The FBRAM, through its Technical Committee, has always taken a lively interest in rubber specifications, organizing the manufacturers' side of the negotiations which take place in the neutrality of the British Standards Institution. But the work has been considerably extended and intensified by the setting up of its Specifications Advisory Committee.

The work of this body first reached the public eye last December with the publication of the Federation's *Guide to the Drafting of Rubber Specifications*, of which nearly 1,000 copies have now been distributed to companies and official departments both at home and abroad.

This committee is now engaged on work relating to a possible specification on Recommended Storage Procedure for Rubber and Rubber Components.

As its guiding principle, the committee has had the selection of the appropriate tests for the material or the product concerned, and, indeed, came into being because of the illogical insistence by some users on tests which bore no relation to the conditions of service of the article. But to say and recognize that principle is only the first step in a series of complicated decisions aimed at setting up a realistic, useful specification.

CHARLES JENNINGS

MEN and MATTERS

A Review of People and Events

by Peter Richards

LAST Tuesday May 16 was a memorable occasion in the life of David Jones for on that day he was presented with the Duke of Edinburgh's gold award at Buckingham Palace by Prince Philip himself.

David is 16 years old, and since leaving school has been employed by Russells Rubber Co. Ltd. of Wellington, Shropshire, where his fellow employees, and his employers, are very proud of his achievement.

The standards to be attained under the award scheme are very high and require the entrant to be physically fit, interested in worthwhile hobbies, take part in some public service — in David's case St. John Ambulance Brigade and welfare work, and to cover 50 miles in 72 hours on foot in an open-air expedition.

David Jones has won the Bronze and Silver awards during the last two years and is very appreciative of the help and encouragement he has received from the staff of the Trench Secondary Modern School at which he was a pupil before joining Russells.

Shock Treatment

The General Rubber Goods Division of Dunlop has just completed a very strange commission. The Agricultural Research Council has been supplied with eight Fortiflex tanks for the transport of live electric eels from Liverpool docks to Cambridge. The Council tried various different types of containers for transporting the eels, and found that Fortiflex were the most satisfactory; they are made from a compound of natural rubber and phenolic resin, which makes them light, flexible and extremely strong.

Another enquiry has been received for Fortiflex trays for the conveyance of live oysters and crabs by air to the US. So if anyone wants to move house with a goldfish or two, or a hammerhead shark, Dunlop will be only too happy to help.

Mistake About Mulroy

It was incorrectly stated in last week's issue that John Mulroy had been a member of the board of the Empire Rubber Co. He was in fact on the board of Chichester Rubber Co., a wholly owned subsidiary of H. G. Miles Holdings Ltd. and we apologize for the error.

W. G. Morris

The death has occurred at his home in Hale, Cheshire, of William Griffin Morris, sen., a former chairman of Greengate and Irwell Rubber Co. Ltd., at the age of 82. Mr Morris began work with the company in 1901 and retired in May 1953. He was elected to the board in 1923, became deputy chairman in 1938, and was appointed chairman at the beginning of 1952.

He undertook considerable development work in the production of observation balloons during the first world war on behalf of the Ministry of Supply and his technical knowledge was again used in output of barrage balloons in the last war.

His son, Mr William Griffin Morris, jun., is now assistant managing director of Greengate and Irwell Rubber Co. Ltd.

David Jones shows his gold award certificate to his father and sister outside Buckingham Palace, after the presentation by the Duke of Edinburgh (*see first story*)

Consultant Appointment

Dr E. G. Fisher, well known in the plastics industry as a consulting engineer and as consultant editor to *International Plastics Engineering*, has recently announced the appointment of E. D. Chard as his assistant. Mr Chard (pictured here) has been employed for the past five years by the De Havilland Aircraft Co., working on a variety of guided weapon and aircraft development projects. He has specialized in reinforced plastics, foams and fluorocarbons, and rubbers associated with aircraft propeller de-icing equipment.

Shoes and Ships . . .

'But four young Oysters hurried up,
All eager for the treat:
Their coats were brushed, their faces washed,
Their shoes were clean and neat —
And this was odd, because, you know,
They hadn't any feet'.

Not so Tom Reid of the Firestone Tyre and Rubber Co. Ltd., who last week was formally installed as member number one of the Golden Shoe Club at a reception held at the Criterion, Piccadilly. He was presented with an illuminated certificate, a green and gold club tie and a badge, by George Denton, managing director of International Safety Products Ltd.

Membership is open to anyone who can prove that thanks to wearing safety shoes or boots they escaped from what would otherwise have been a serious foot injury. The club is sponsored by a group of Britain's leading safety footwear manufacturers and its aims are fully commended by the Royal Society for the Prevention of Accidents.

The fact that the first award went

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to a rubber industry worker is, however, no indication that this is a particularly dangerous industry. In 1959, the last year for which complete statistics are available, 'reported' injuries to feet and ankles totalled 37,200. Since a 'reported' accident is one which keeps a person away from work for more than three days,

Tom Reid holding the safety shoe which saved his foot from serious injury when it was trapped in a giant tyre-bagging machine. Despite its battered appearance, the shoe's steel toe-cap remained intact

all these injuries must have been fairly serious. According to the chief inspector of factories, many of these accidents could have been prevented by safety footwear, so the Golden Shoe Club can do industry a good turn by helping to prevent the loss of a great many man-hours and the rubber industry, in particular, by helping to promote the sale of safety boots.

Raphael Woolf

It was with deep regret that I learnt of the death of Raphael Woolf, who passed away suddenly at his home on May 7.

He first joined R. Woolf and Co. (Rubber) Ltd. in 1916. After serving in the Army during the first world war he returned to the company, becoming chairman on the death of S. Woolf. He took an active part in the All Rubber Hose Association of which he became chairman. His untimely death came as a shock to his many friends and associates in the rubber industry. He leaves a widow and two daughters to whom many expressions of sympathy have been sent.

Vitafoam Board Changes

Norman Grimshaw, formerly chairman and joint managing director of Vitafoam Ltd., is now to be chairman only. This change has been made so that Mr Grimshaw can devote more time to long-term planning. The company is expanding rapidly. They are developing a pvc foam plant and a glass fibre moulding service for mass production.

Graham Smith, who was formerly joint managing director, now becomes deputy chairman. New joint managing directors are Frederick Whitehead, formerly sales director, and Fernly Parker, who was financial director and company secretary.

The North British Rubber Co. has appointed Edwin A. Martin works director. He was with the United States Rubber Co. as a divisional production manager before he came to this country

'Tensile test — jittery bridegroom waiting at the altar'

THE LEGAL ANGLE

What Marks Can You Register?

By a Barrister

'I.C.I.'s moulding material under the trade name "Diakon", is used in the manufacture of motor car rear lights, telephones and many components of the radio and television industries. . . .'—RPW, January 1961.

A registered trade name, no doubt. So no one can trespass upon it. And equally, the word Diakon would seem to be an invented word — and as such, capable of registration.

But do you know what essential features a trade mark must have, if it is to be registered? Under the Trade Marks Act, 1905, it must contain or consist of at least one of the following essential features:

(1) the name of a firm, individual or company, represented in a particular or special manner; or (2) the signature of the applicant for registration, or of some predecessor in his business; or (3) an invented word or words; or (4) a word or words having no direct reference to the character or quality of the goods, and not being according to its ordinary signification a geographical name or a surname; or (5) any other distinctive mark.

If you want to register a mark which contains one of these features, then you must still come within Section 11 of the Act — and, in particular, you must ensure that the mark would not be 'calculated to deceive'. It mustn't be too near some other mark, or you will not get it registered.

'Suppose that you cannot have a mark registered, if you use it anyway, what extra risks do you run?'

It all depends on the reason for non-registration. There are many brand names which are not registered, but which are jealously preserved. Non-registration will prevent you from taking proceedings for an infringement of a trade mark, but not from bringing a 'passing off action', if you consider that some other product is being marketed under a name so similar to your own as to suggest that your competitors are trading on your goodwill and trying to 'pass off' their goods as yours.

Finally, some examples from industry of registrations allowed and disallowed. The following have been held registerable—'Solio' for photographic printing paper; 'Savonol' for soap — but not 'Absorbine' for an absorbant product nor 'Lactobacilline' for a lactic ferment. The former words were held to be 'invented' — but the latter were not. Which shows that the borderline between invention and actuality is a narrow one indeed.

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Polymers in Moscow

100 POLYMER FIRMS AT BRITISH TRADE FAIR

AMONG the 600 firms exhibiting at the Moscow Trade Fair, which opened yesterday, are nearly 100 which are in, or connected with, the polymer industry.

Muscovites can see a wide variety of protective footwear on the **Dunlop** stand. The representative collection of wellingtons and safety boots includes rubber knee and ankle boots (Landmark, Warwick, Target, Solent and Lumber), knee and ankle length rubber safety boots, Safetymaster leather ankle boots, Safety Plus rubber short knee boots, and anti-acid rubber knee boots. **Semtex Ltd.** has designed and supplied the flooring for the Dunlop stand. For some years Russian trawlers built in the UK have been equipped with Semtex decking material, but this is the first time that Semflex and other Semtex flooring materials will have been shown in Russia. The **Turner Brothers Asbestos Co. Ltd.** stand focuses attention on the company's wide range of asbestos textiles, jointings, conveyor, elevator and power transmission beltings, as well as plastics reinforcement materials.

The Formica stand at Moscow contains sections of an industrial canteen, a hospital, a kitchen and a railway carriage, demonstrating applications of decorative laminates

A 'good mixer' at the Fair is a Banbury manufactured by **David Bridge and Co. Ltd.** and driven by a 300hp Crompton Parkinson slip-ring motor. It is being demonstrated on the stand that the Banbury is essentially a batch machine but where short cycle technique can be applied, the addition of suitable ancillary machinery can convert the output into continuous-flow production. High-pressure mixing is based on the principle that the more horse power there is applied to any mixing job the better the dispersion will be. The high-pressure short cycle mixing on Banbury mixers, the Russians are being told, has resulted in mixings and mastications being achieved in times varying from 1¼ to 4min. The effect of these new Banbury techniques and machines has been to improve quality, increase output, reduce manufacturing costs and streamline the production flow, especially when used in conjunction with automatic equipment for weighing and feeding the compound ingredients.

B. J. Pidgeon, export manager of R. H. Windsor and Co. Ltd., explaining a point to Mr Khrushchev at the I.C.I. Plastics Division Moscow exhibition in 1960. At the Fair, Windsor is showing its AP30/115 and SP7 injection moulding machines

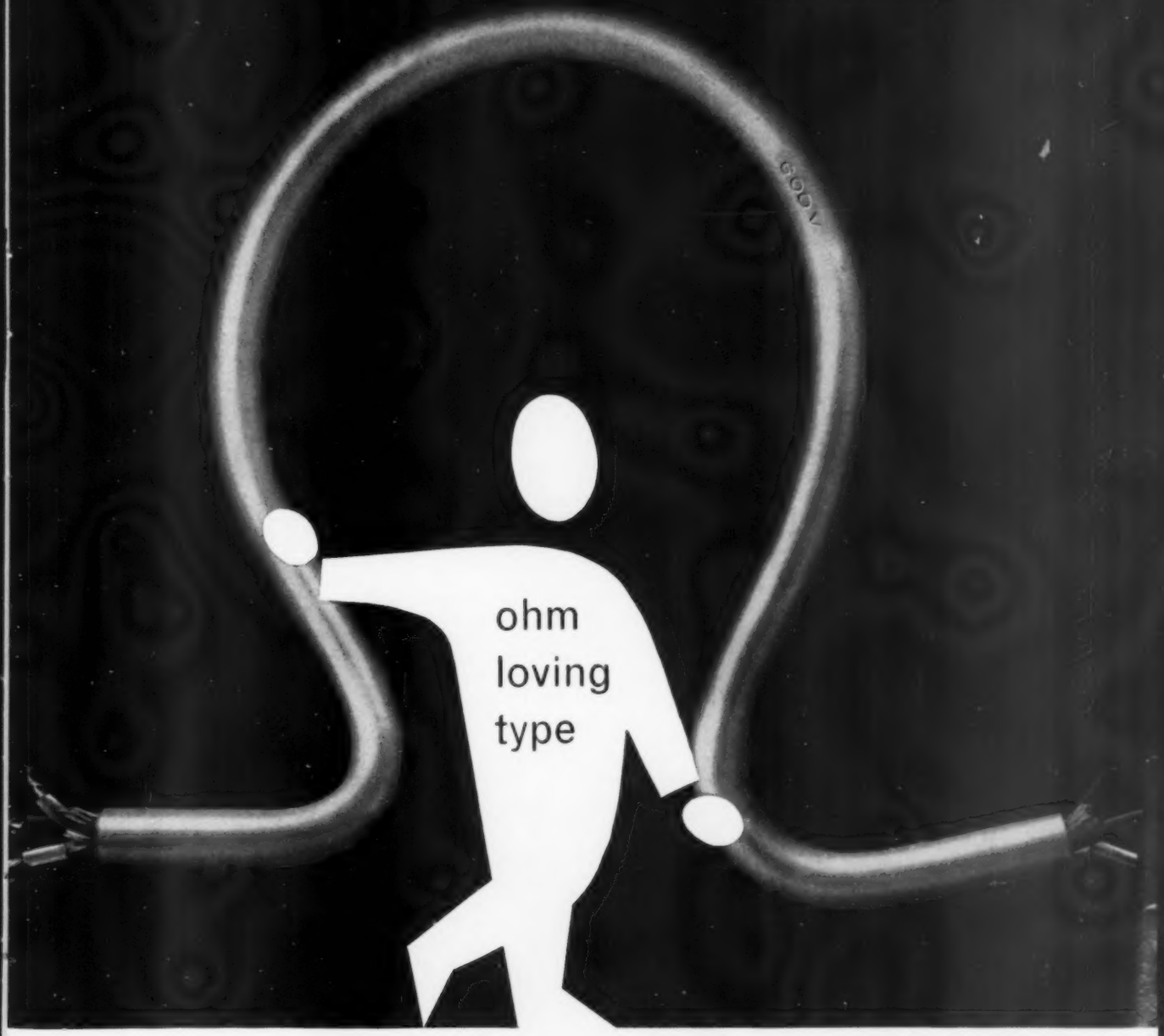
No stranger to Russia is **R. H. Windsor.** In conjunction with I.C.I., this company exhibited at Moscow and Leningrad during 1960 and the AP1044 Injection Moulding Machine, which is of the twin screw preplasticizer type, attracted considerable interest. Windsor is showing the SP7, capable of fast cycling with control gear covering all contingencies of moulding thermoplastic materials. It is designed for repetitive output on fully or semi-automatic operation, and the injection unit is of the single screw preplasticizer type. Also being shown is the AP.30/115; of the medium capacity range producing shot capacities of 115 cu. in. of plasticized material, this machine is constructed for hand or semi-automatic control of cycle.

The International Synthetic Rubber Co. Ltd. is showing actual examples of finished products containing Intol SBR-footwear, tyres, belting, kitchen equipment, sports goods, motor accessories, flooring and cables. Additionally the stand will show pictorially the story of ISR, which exports to more than 30 countries.

Besides its usual good display of decorative laminates, **Formica Ltd.** is showing examples of extrusions. These include a new fire hose of flexible pvc and Terylene; a selection of seamless, transparent containers with brightly coloured tops and bases, for safe and visible packaging; and examples of polythene piping.

Another firm which is no newcomer to Eastern Europe is **BTR Industries Ltd.** This firm, showing a wide range of products, has supplied the Polish State Mines with large quantities of specially-designed anti-static conveyor

Shell Chemicals



Good insulation is where you find it – in 'Cariflex' SBR. 'Cariflex' S-1509 combines good electrical properties for medium voltage applications with remarkable ease of processing and extrusion. Ideal for cable sheathing too. Or, for lowest cost sheathing compounds, the light-coloured, non-staining, oil-extended 'Cariflex' S-1707.

And now 'Cariflex' Isoprene Rubber, the new Shell polyisoprene. Combines first class insulation properties with low water absorption, excellent extrusion characteristics and light colour. For cables, as for many other applications in the electrical industry, 'Cariflex' is the right rubber for the job.

For further information consult your Shell Company (in the U.K., apply to Shell Chemical Company Limited, Plastics & Rubbers Division, 170 Piccadilly, London, W.1.)

Cariflex
TRADE MARK

SHELL-MADE RUBBER

belting. The anti-static property is obtained by a carbon path layer and the pvc covers are specially compounded to give anti-load-slip properties which prevent coal from running back down the belt — even on gradients in excess of 1 in 3.

Although the Soviet Union is known to have begun making silicones, probably on a large scale, one company at the Fair, **Midland Silicones Ltd.** point out that, with ten years' experience in this field, it can offer specialized silicones developed with the needs of industry in mind. The decision to exhibit followed a market investigation journey to the Soviet Union last year by Dr R. A. Gregory, the company's joint managing director, accompanied by A. K. Simcox, the general sales manager. Apart from finding out more about the sort of silicones Soviet technologists need from abroad, Dr Gregory and Mr Simcox gave several lectures in Moscow.

Amongst the most important firms exhibiting are **Imperial Chemical Industries** and **The Distillers Co. Ltd.** The latter is laying particular emphasis on the large-scale petrochemical production of plastics raw materials by **British Hydrocarbon Chemicals Ltd.**

The I.C.I. stand, an artist's impression of which appeared in *RPW* April 15, 585, is one of the largest in the show and covers 2,680 sq. ft.

All the company's interests will be demonstrated but dyestuffs, plastics and fibres divisions have the largest displays and between them occupy almost half the stand. Plastics division staged a very successful exhibition at Moscow and Leningrad last year and it is hoped that the trade fair will consolidate many of the contacts made then. Fibres division will show applications of Terylene in clothing and a number of industrial uses.

Formica Flexible Edging

A new edging material made from pvc has just been introduced by Formica Ltd. This gives a smooth neat finish to the edges of formica surfaces and should be of interest to do-it-yourself enthusiasts and to professional fabricators.

Known as Flex-Edge, the new material is available in 100ft. coils in five widths and six colours. Easy to cut and work with, it is crescent shaped to give an attractive curved edge and a special J-shaped section is also available. All widths will become available during May at prices ranging from 3½d. to 7½d. a foot.

Export Anniversary

MACLELLAN'S CELEBRATE TEN YEARS DEVELOPMENT

ALTHOUGH the firm of George MacLellan and Co. Ltd. was founded in 1870, it was not until just ten years ago that a systematic programme of export development was started. So successful has this been that now more than 25% of total production is sold overseas in nearly 50 countries.

To mark the occasion a tour of the works and a luncheon was arranged, which took place last week and was typical of the hospitality and courtesy extended by the firm to all its visitors, mention of which has previously been made in *RPW* (March 25, 449).

Broadcasting in Tonga

The company is still a family concern and several members of the MacLellan family are actively connected with it, headed by the chairman, Kenneth MacLellan, son of the founder. The expansion of the company is reflected in the existence of two associate companies, Flexible Ducting Ltd., and Cochrane Protective Clothing Ltd.

The main exports of the company are rubber flooring and Sea-Esta airbeds. A recent interesting flooring order was for the new broadcasting station in Tonga and within the past few weeks large orders for flexible ducting have been received from Yugoslavia, Nigeria and Persia.

Patriotic Outlook

The importance of building up and maintaining profitable export markets is of vital importance to the economy of the country and the outlook of MacLellan's could well be copied by other manufacturers in the UK. To quote Robin MacLellan, joint managing director 'Export is fun —but not funny. We export — and we make no bones about it — for profit. But profit is not the only motive. We feel we have a duty to export. A duty not only to shareholders but to the country in general, Scotland in particular, and not least to our employees, whose jobs and well-being might be jeopardized by apathy on our part. We shall face the future, quietly, confidently, with hard work and much careful salesmanship. We will not face it apologetically or half beaten before we begin, with our tail between our legs'.

New Shell Epoxy

Shell Chemical Co. Ltd. has just introduced a new resin, Epikote X-71, to their range of liquid epoxy resins.

Epikote X-71 is a low viscosity resin which has been specially developed to impart flexibility to epoxy resin compositions. It may be used in combination with the liquid Epikote resins 815, 828 and 834 to increase the flexibility, impact strength and toughness of the cured composition, while at the same time serving as a viscosity modifier.

Epikote X-71 is particularly recommended for use in the production of crack-resistant castings and for the encapsulation of electrical components where flexibility and resistance to mechanical and thermal shock is imperative.

One bay of the new rubber hose factory of George MacLellan and Co. Ltd.

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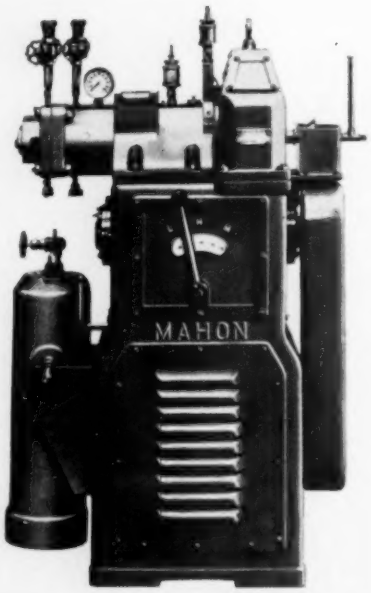

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Plantation Newsletter

UNION ASKS FOR NEW WAGE STRUCTURE

by our Malayan Correspondent

FROM KUALA LUMPUR

MALAYA'S biggest trade union, the National Union of Plantation Workers with its 150,000 members, is finding that it is not the big European-owned rubber estates that stand in the way of labour being organized but more often than not the Asian estate owners.

The NUPW, which undoubtedly is the best organized and best managed Union of South-East Asia, is today worried about the attitude of some Asian estate owners whom, it is claimed, are persuading workers from joining the union. There are still roughly another 150,000 estate workers who are not members of the Union.

A great deal of new legislation governing labour laws has been introduced in Malaya since independence in 1957 and much old legislation overhauled.

The greatest progress has perhaps been made with the firm establishment of what the Deputy Prime Minister, Tun Abdul Razak, has termed 'industrial democracy', the free interplay of unions and employer groups.

In Malaya it is too easy to forget that in other Asian countries the term has a vastly different meaning and unions have far less opportunity to indulge in their democratic right of disagreeing with the Government and with anyone else they oppose.

Today, the NUPW is to ask for a new wage structure for its members. Proposals are contained in a memorandum to the Malayan Planting Industries Employers Association (MPIEA) by the union.

The union secretary-general, Mr P. P. Narayanan, however, refuses to divulge the details. 'We want the MPIEA to study the memorandum first before it can be released to the public', he said.

Negotiations Soon

This is the first demand by the NUPW since it entered into a wage agreement with the MPIEA on February 7 1959. It is still uncertain here whether the union is asking for a cancellation of the existing agreement or suggesting modification to some of its clauses.

According to the existing agreement, the union is at liberty to suggest modifications or amendments to any of the clauses by giving written notice.

Negotiations will begin in four weeks' time following the receipt of that notice and if there is a deadlock either party is at liberty to cancel the agreement by giving one month's notice. The existing agreement took 12 months to prepare before it was signed by both parties.

It is understood, however, that the union's concern is over the monthly income of estate workers which has fallen recently because of the reduced rubber price and recent wintering of trees.

In the past, union bosses and officials of the MPIEA have always been able to iron out their differences round a table, even although it might take a long time.

Today, too, it is no secret that the union is anxious that pensions should be paid to workers on their retirement and severance pay to those dismissed for reasons of redundancy or reorganization.

They also urge that agreement on wages and other benefits between the MPIEA and the NUPW should be implemented by all large estates which are not members of the MPIEA.

Further Education

For years, the Malayan rubber industry has enjoyed industrial peace despite the rubber workers having had to bear the brunt of the Communist terrorist activity in this country during the 12 years of the Emergency. Dozens of rubber tappers lost their lives because they refused to co-operate with the Communists but never did the rubber stop flowing from Malaya.

In March this year, the NUPW announced that it is to give two scholarships to children of estate workers to study law and economics in Britain.

Mr Narayanan said there were several children of estate workers who had obtained grade one Senior Cambridge certificates and they should be given an opportunity to further their studies overseas.

He announced that the Union would shortly call for applications and a selection would be made by a special board consisting of educationists and union officials.

The union, he said, had earmarked between $600 and $700 expenditure a month for each successful candidate during their stay in Britain.

Mr Narayanan said that today there was a great demand for education among estate workers' children. He said they welcomed the help and assistance given by a few of the major rubber companies which willingly assisted these children.

Rubber Statistics

WORLD POSITION — CANADA — MALAYA — INDONESIA

ADVANCE information on the world rubber situation during February, and the latest revised figures for 1960 and January 1961, have been issued by the Secretariat of the International Rubber Study Group (in long tons).

NATURAL RUBBER

	Year 1960	Jan. 1961	Feb.
Production..	1,965,000	157,500	
Deliveries from stock-piles ..	151,000	2,000	1,000
Consumption	1,985,000	167,500	160,000
Stocks end period:			
In producing areas	282,500	292,500	282,500
In consuming areas	232,500	235,000	230,000
Afloat ..	230,000	195,000	
	745,000	722,500	512,500

SYNTHETIC RUBBER

	Year 1960	Jan. 1961	Feb.
Production..	1,887,500	150,000	145,000
Consumption	1,780,000	152,500	137,500
Stocks end period ..	365,000	357,500	355,000

Canada

The Dominion Bureau of Statistics reports that consumption of all types of rubber in March this year declined to 8,822 long tons from 10,569 in the corresponding 1960 month. With decreases in January and February, consumption in the January-March period dropped 18.7% to 24,847 long tons from 30,554 a year ago. March consumption by types was as follows: natural 2,623 long tons (3,507 a year earlier); synthetic, 4,815 (5,365); and reclaimed, 1,384 (1,697).

First quarter consumption was: natural, 7,356 long tons (10,418 a year ago); synthetic, 13,643 (15,325); and reclaimed, 3,848 (4,811).

Malaya

Imports of rubber into Singapore and Malaya during April totalled 33,878 tons as shown by final documents received. According to preliminary figures issued by the chief statistician in Singapore.

This figure includes 13,485 tons imported on provisional permits in previous months for which final documents have been received and excludes 24,640 tons imported during the month for which final documents have not been received. The comparative figures for March were 36,810, 15,502 and 16,376 tons respectively.

Indonesia

Reported exports of rubber from the Republic of Indonesia during January 1961 amounted to 30,892 long tons of which 13,647 long tons were reported as being of estate origin. Total reported exports during the year 1960 amounted to 547,252 long tons.

Plantation Share Survey

THE price of rubber during the first four months of the year averaged 25¼d. per lb. This is more than 9d. below the corresponding Mincing Lane quotations for the similar period in 1960. On this comparison it could be implied that producers must have suffered considerably from a setback in profit margins. However, the trading position is much less marked than supposed. Rubber producers in Malaya, for instance, are to a large extent cushioned from the full effects of current lower selling prices by reducing charges in respect of export duty and wage rates. Both of these important items in estate economy are based on the price of rubber. And it appears that the firms producing premium grades have been able — up until now — to offset even more of the market fall.

This has been the experience of LABU CHEVIOT RUBBER, one of the leading producers in the GUTHRIE group, whose outputs are largely processed into concentrated latex. At a shareholders' meeting earlier this month Sir John Hay, the chairman, gave the reassurance that sales and costs to date this year showed a profit margin of a little over 1d. per lb. less than a year ago and stated that the company was doing 'not too badly'. Sales to date total 4,780,000lb. at 28.6d. per lb. from an estimated total crop of 12,120,000lb. compared with an actual output of 11,800,000lb. in 1960.

Furthermore Sir John had the same kind of thing to tell his shareholders of MALACCA RUBBER PLANTATIONS. In his report he said that the crop harvested to the end of April was 4,117,000lb. It seemed to promise that the estimate of 12,700,000lb. should be realized having regard to the weather conditions for part of the period. They had sold 5,539,000lb. at an average of 28.65d. per lb. at a realized profit somewhat less than 1d. difference compared with last year, a 'very satisfactory achievement' considering the heavy fall in the price of rubber. If that could be maintained, results for the current year should, he said, be 'very satisfactory'. However, Sir John warned shareholders that the price of rubber was much below the price they had succeeded in realizing so far. He did not think that they should expect the directors to maintain that very satisfactory level for the whole year.

The board of DWA PLANTATIONS propose to capitalize part of their reserves and make a share bonus of one-for-one to ordinary holders and issue one 2s. ordinary for each 10s. preference to those registered May 30. New ordinary will rank for any final dividend in respect of 1960 for which year the net profit is £37,500 against £26,926. Preference holders will be given two votes per 10s. share thereby ensuring that voting control remains in their hands. Mr S. A. Dohm, a director, is proposed as a nominee of the preference holders in place of the late Mr E. Portlock.

One of the two estates owned by BATU KAWAN RUBBER AND COCONUT is situated near the mainland terminal for Penang Island and the development of the port facilities is being taken in hand by the Government. As a result, it is expected that parts of this property estimated at about 700 acres, will in time acquire a value considerably in excess of its worth on an agricultural basis. In his yearly statement the chairman said that while development plans of Governments are apt to move more slowly than those connected with private enterprise, the directors have heard nothing to change their opinion that the value of some of the company's land where building development is possible will in due course attain much higher figures.

As regards the halving of the interim for the past year it has been noted that part of the previous payment of 6¼% was paid from the profits of 1957-58. In effect the yearly distribution has been reduced from 10 5/12% to 8⅓%, which is by no means out of the way considering the poor market that existed for the company's main product — copra — during the period. The better market for rubber was reflected in an increased balance of £2,700. Net proceeds deducting export and cesses averaged 24.5d. per lb. against 21.1d. per lb.

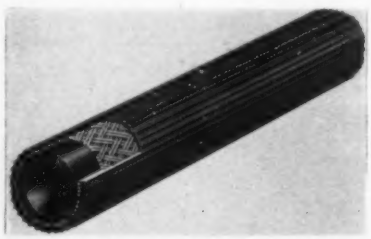
Certain shareholders in MALAYSIA RUBBER have been approached by a Chinese syndicate (claiming to represent some 25% of the company's capital) seeking their support for a sale of the estate. It is said that the company has received an offer of 2,300,000 dollars (approximately £268,000) for the property of 1,442 acres of rubber, and a sale on these terms is calculated to give the 2s. shares (which are quoted in the market at around 9s.) a break-up value of about 14s. A circular from the chairman strongly advises shareholders to ignore the approach and promises a further statement after the necessary enquiries have been made concerning the bona fides of the bid for the estate.

PORT DICKSON-LUKUT RUBBER, one of the Guthrie companies, has sold 252 acres of land, including 171 acres planted with rubber, for the exceptional consideration of £72,000 or the equivalent of £420 per acre of rubber. The buyers are the Standard Vacuum Oil Co., who are building a $50m. oil refining plant on the site. This transaction will reinforce the company's already strong financial position — net current assets at March 31 1960 amounted to £255,000, apart from trade investments of £27,000 — and will help to cover the cost of a programme of laying down new areas with rubber from the reserve land. In this way, the capital cost will be further reduced from the present level of £44 per acre.

Companies ending their financial year on March 31 are likely to record a fall of about 4d. per lb. in average selling prices for their 1960-61 outputs. Somewhat lower profits are therefore to be anticipated from this group in respect of the past year. The announcement of reduced interims from MERLIMAU PEGOH (6% against 7½%) and BUKIT MERTAJAM RUBBER (17½% to date against 22½%), while confirming expectations, rather implies that the price adjustment in the stocks of these two companies (from 4s. 3d. in 1960 to a current level of 2s. 7½d. in the case of Bukit Mertajam and from over 5s. to 3s. 3d. for Merlimau Pegoh) fully discounts the next reports. On the basis of the probable full distributions for 1960-61 both shares seem likely to yield above average returns, particularly so in the case of Bukit Mertajam, with a likely total for the past year of at least 22½%.

Goodyear in the Garden

A replacement for the popular two-braid cotton reinforcement garden hose has been announced by Goodyear Tyre and Rubber Co. (GB) Ltd. It



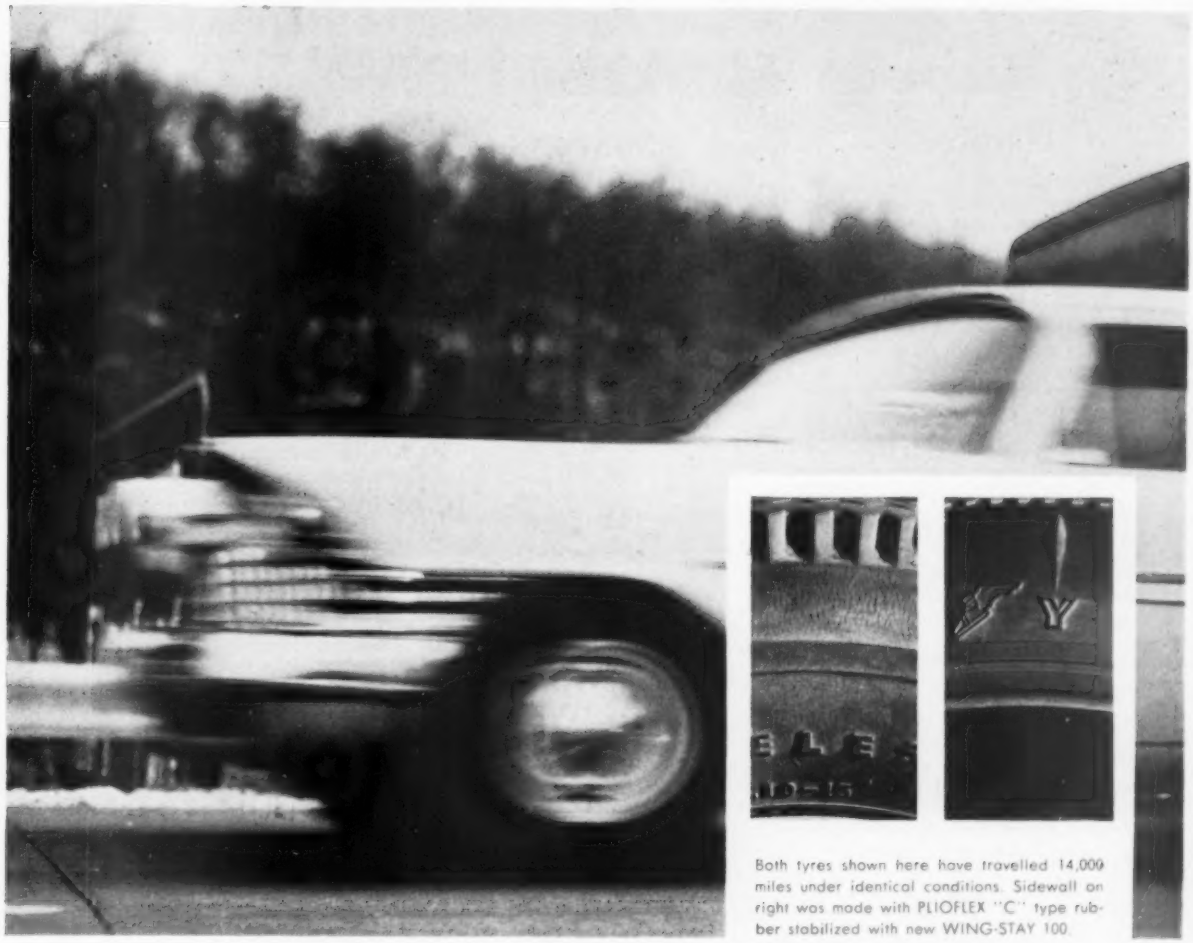
is a long length single-braid high tensile rayon reinforcement hose.

This hose is said to have a strength equivalent to the two-braid cotton hose coupled with greater flexibility and light weight. (This new reinforcement can be compared with that of a tyre carcass, which may have a six ply rating, yet consist of four plies of cotton or two plies of rayon.)

The rayon is thoroughly impregnated, and is claimed to provide an adequate safety margin above the specified working pressure. The hose (in sizes ½in., ⅝in. and ¾in.) is free from porosity and resistant to water absorption.

Bakelite Distributor

Dennis and Robinson Ltd. of 136 Albion Street, Southwick, Sussex, has been appointed a main distributor of Bakelite's laminated plastics.



Both tyres shown here have travelled 14,000 miles under identical conditions. Sidewall on right was made with PLIOFLEX "C" type rubber stabilized with new WING-STAY 100.

Now—rubber that keeps its age a secret

WHIRLING AROUND a test track—or spinning through traffic—tyres *age* with wear. The effects of this aging process show up most often in the sidewalls, where small cracks appear.

WHAT CAUSES CRACKING? Two things, mainly—atmospheric oxygen and ozone. To combat them, antioxidants have been developed. So have antiozonants. *But not until now* has a truly effective *combination* of antioxidant and antiozonant been perfected.

CALLED WING-STAY 100, this new Goodyear chemical is yours in new PLIOFLEX 1500C, a "cold" nonextended styrene-butadiene rubber. Superior aging resistance thus becomes another key advantage of this general purpose cold rubber—along with excellent processing characteristics, high tensile strength, exceptional uniformity and good abrasion resistance. It is ideal for most black products where staining and color are not limiting factors.

FOR MORE INFORMATION on PLIOFLEX "C" type rubbers—plus other rubber chemicals and a full line of synthetic rubbers—see your Goodyear Chemical Distributor.

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Rubber Markets

LONDON

Values tended to ease in a quiet market, but selling pressure was evident and buyers found sellers reluctant to offer below Eastern parity. Later the market hardened in sympathy with a rally at Singapore, supported by reports of three Russian vessels to load there before the end of May. The recovery was lost following an unexpected decline at Singapore.

Latest prices are as follows:

No. 1 RSS Spot: 26½d.-26⅝d.

Settlement House:

June 26⅜d.-26⅜d.

July/September 26½d.-26⅝d.

October/December 26½d.-26⅝d.

January/March (1962) 26½d.-26⅝d.

April/June 26⅜d.-26⅜d.

No. 1 RSS cif basis ports:

June 26½d.-26⅝d.

July 26½d.-26⅝d.

Godown:

June 88¾ Straits cents nominal.

Latex

Centrifuged 60% latex per gallon in drums, seller, June, July, 15s., cif European ports. Spot, seller, 15s. 7d. Bulk, seller, d.w. 15s. 1d. Creamed, seller, 14s 9d. nominal. Normal, seller, June, July, 12s. 2d.

NEW YORK

The New York rubber market ruled as under on May 15:

Dealers' Prices

	US cents per lb., ex-dock	
	May 15	Previous
No. 1 RSS, May ..	32n	32¼a
June ..	31⅞a	31⅞t
No. 2 RSS, May ..	31⅞a	32¼a
June ..	31⅛a	31⅞n
No. 3 RSS, May ..	31⅞a	32a
June ..	31⅞a	31½n
No. 1 RSS, Spot ..	32n	32⅛n
No. 3 amber blanket crepe, May	26¼n	26¼n

Futures—Rex Contract

	US cents per lb.	
	May 15	Prev. Close
May ..	31.30b–32.00a	31.40b–32.00a
July ..	31.46t	31.55t
September	31.00b–31.14a	31.10b–31.20a
November	30.90b–31.10a	30.95b–31.10a
January ..	30.75b–30.85a	30.87b–30.90a

Sales: 22. Tendency: Steady.

Futures were a shade lower in slow featureless dealings on May 15. Physical rubber was very quiet and little changed pricewise. Dealers said that there was little or no factory offtake.

SINGAPORE

The market opened uncertain on May 15 and prices tended to ease during the morning in slow trading. Interest in lower sheets was small and bids for off-grades failed to attract sellers. The market held steady at the lower levels during the afternoon on good trade enquiry. Lower sheets were generally in good demand with sellers reluctant.

	Malayan cents per lb., fob Malayan ports to open ports	
	May 15	Prev. Close
No. 1 RSS, June ..	90½–90½	91 –91⅛
July ..	90½–90⅝	91⅛–91⅜
No. 2 RSS, June ..	89⅞–90⅛	90⅛–90⅜
No. 3 RSS, June ..	89⅜–89½	89¾–90⅛
No. 4 RSS, June ..	86⅛–87⅛	86½–87½
No. 5 RSS, June ..	77⅛–78⅛	77⅜–78⅜
No. 1 RSS, Spot ..	89⅞–90⅛	90⅛–91
No. 3 blanket thick remilled crepe, June	74½–75½	74½–75½
No. 1 fine pale crepe, June	95½–96½	96 –97½
2X thin brown crepe, June	73½–74½	74 –74½

Tendency: Quiet but steady.

The Industries Syndicate quote latex, native produce, 60% centrifugal, packed in rectangular drums, fob, at 177.80d. per gallon.

AMSTERDAM

The Amsterdam rubber market ruled as under on May 15:

	Guilders per kilo	
No. 1 RMA	May 15	Previous
May	2.47	2.46
June	2.47	2.45
July	2.48	2.51
August	2.48	2.51
September	2.48	2.51
July/September ..	2.48	2.51

Sales: Nil. Tendency: Quiet.

DJAKARTA

The market showed little improvement on May 16. There was less demand for No. 1 and No. 2 sheets respectively. The market outlook was considered dull.

	Rupiahs per kilo	
	May 16	Previous
Spot No. 1 Priok ..	34.00b	33.50b
Spot No. 2 Priok ..	33.00b	32.50b
Spot No. 3 Priok ..	32.00b	31.50b
No. 1 fine pale crepe, spot	30.00b	29.50b

Tendency: Dull.

BANGKOK

The price of No. 1 RSS at Bangkok on May 15 was 28.62½ (28.62½) US cents per lb.

CEYLON

The price of No. 1 RSS at Colombo on May 15 was 111 (112) Ceylon cents per lb.

BPF and GRP

The British Plastics Federation has announced that the third International Reinforced Plastics Conference will be held in London on November 28, 29 and 30 1962.

Previous conferences organized by the Federation were held in Brighton in 1958 and in London in 1960.

'Last year's conference in London was the largest to be held in Europe, 600 delegates attending', said an official of the Federation, 'and we are expecting more next year'.

The organizing committee is now inviting the submission of papers for the conference and will welcome suggested titles, with short synopses, for consideration. These should be sent to The British Plastics Federation, 47-48 Piccadilly, London, W.1.

ASTM Supplements

The American Society for Testing Materials has recently announced that the 1960 Supplements to the 1958 Book of ASTM Standards have been completed. Each Part-supplement brings up-to-date the corresponding Part of the 1958 Book of Standards and 1959 Supplement by including new standards and revisions adopted in 1960.

The Book of ASTM Standards is published triennially with Supplements in the intervening years for each of the ten parts in the book. Part 9 deals with plastics, electrical insulation, rubber and carbon blacks.

Minerals on Rubber Estate

Outcroppings of iron and manganese ore have been found in small quantities on the Subur property of Henrietta Rubber Estate, the board has announced. The statement emphasizes that at the present there is no news on whether the deposits have any commercial value.

Calls for Tenders

Chemical Products

The British Embassy at Rio de Janeiro has reported that Industrias Quimicas do Brasil SA, Caixa Postal 394, Rio de Janeiro, would like to get in touch with UK manufacturers of ketones, glycols, ethers, ethanolamines and isopropanolamines, and other polyglycols.

The company is an importer of chemical products, having branches at Sao Paulo, Recife and Porto Alegre, and holding agencies for USA, UK, Belgian and French firms.

Manufacturers should write direct to Henry H. Back at the address given above. It would be appreciated if, at the same time, they would notify the British Embassy, Praia do Flamengo 284-2° Andar, Caixa Postal 669, Rio de Janeiro, that they have done so. (Ref. ESB/15110/61.)

Industry INTELLIGENCE

Technical Data

Empol 1024

Price's (Bromborough) Ltd. recently appointed agents for Unilever-Emery (*RPW*, February 25, 286), has issued a technical bulletin, Empol 1024 a polymerized fatty acid. This is specifically designed for those uses where the chain-stopping tendency of monobasic acids cannot be tolerated. It can be used in polyurethane foams as a raw material economically and with first-class results. Rigid foams with good physical properties can be made from polyesters based on Empol 1024, and may be readily heat laminated. Empol 1024 reacts readily with polyols, and low acid numbers are simply obtained. Additionally, since the acid is essentially non-volatile, losses during esterification are negligible.

Carbon Black Masterbatches

Texas-US Chemical Co. has issued two technical data sheets. One gives information on Synpol 8155A and the other on Synpol 8257A. The first is a cold black masterbatch, containing 52 parts of ISAF black and 12.5 parts of a highly aromatic oil per 100 parts of polymer. Emulsified with rosin acid and protected with a staining stabilizer, the applications of Synpol 8155A include tyres and mechanical goods where good abrasion is necessary.

Synpol 8257A is a cold, oil-extended carbon black masterbatch, containing 75 parts of HAF black and 50 parts of naphthenic oil per 100 parts of RHC. It is protected with 1.25 parts of non-staining stabilizer, and has been developed for use in extruded and moulded mechanical goods applications that require a non-staining black compound.

Monastral Fast Blue BGS

Monastral Fast Blue BGS is a pure beta-form of copper phthalocyanine, and gives greenish-blue shades of outstanding brilliance, strength and fastness.

In introducing this new phthalocyanine pigment, I.C.I. Dyestuffs Division say it is designed primarily for use in printing inks, being of particular value for the production of the four-colour blue used in process printing. Its high strength and hydrophobic nature provide inks of good working properties for offset lithography. The stability of Monastral Fast Blue BGS in the presence of organic solvents makes it useful for photogravure and flexographic inks, in which it may be used without danger of crystallization and loss of strength occurring on storage. This is also a valuable asset in paint systems, for which Monastral Fast Blue BGS is of interest for turquoise blues and greens. The brightness of the beta-form copper phthalocyanine often allows it to be shaded with chrome or iron oxide pigments, thus reducing the overall cost of pigmentation.

Sales Circular SC 858, issued by I.C.I. Dyestuffs Division, gives full data on the properties and uses of Monastral Fast Blue BGS Powder and eight patterns illustrating its use in printing inks and paints.

Machines, Materials and Equipment

Hardness Tester

A simple portable instrument has been developed in the USA for carrying out relative hardness tests on raw materials or fabricated parts. It is available from Industrial Instrument Services Co., Elkington Street, Aston, Birmingham 6.

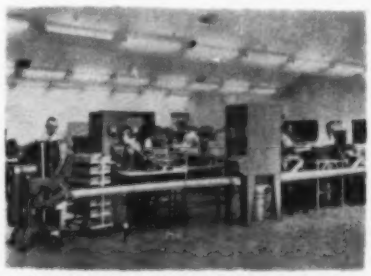
It is applied by hand to the surface to be tested, and when in position, a light pressure releases a spring-loaded indentor; the degree of penetration is instantly registered on a dial. Three models are available to deal respectively with soft metals (aluminium, copper, brass, etc.) and the harder plastics; with softer plastics and metals, and with very soft materials.

Such an instrument is not, of course, intended for accurate measurements in terms of established hardness scales. A conversion chart is, however, provided by which its scale readings may be approximately related to such scales.

New Acme Welder

H. F. Industrial Services Ltd. has introduced a new Acme No. 7 high frequency plastics welding machine, with a power output rating of 1kW. It is a free standing, vertical type machine. The incorporation of stabilized metal rectifiers avoids loss of production time due to the necessity for valve rectifier replacement. This is claimed to be able to carry out a tear seal weld of 60in. long by ⅛in. wide on double thickness 0.018in. pvc. The HT contactor is rated at 16m. operations which corresponds to about ten years' usage.

Further information can be obtained from H. F. Industrial Services Ltd., 317-319 High Road, Wood Green, N.22.



A Dallow Lambert Unimaster dust collection unit serving a batch of four machines, the inter-connecting ducting suiting the user's layout, and giving efficient results

Publications

BFG Booklet

Information on the preparation and application of vinyl solution resins for coating metal, wood, paper, fibreboard and rubber is contained in Service Bulletin G-15 just released by B. F. Goodrich Chemical Co. Included in the booklet is a list of the physical properties of Geon resins suitable for solution coatings, including those approved by the US Food and Drug Administration for food packaging applications. Geon resin solutions can be applied by spraying, dipping, brushing or roll coating. The booklet explains methods of determining the best resin solution for a particular application based on the resin's molecular weight, solubility and solids content and the physical properties desired in the final coating. The booklet also contains detailed information on the formulation of these solutions. Included in this section is a discussion of mixing techniques, solvents, plasticizers, stabilizers, pigments, resins additives and viscosity characteristics.

Copies of the booklet can be obtained from B. F. Goodrich Chemical Co., 3135 Euclid Avenue, Cleveland 15, Ohio.

Plastics Review

Bakelite Ltd. has issued the 1961 edition of *Plastics Review*. This booklet reviews some of the current applications of Bakelite plastics, both in industry and in the home.

The publication gives reasons why the general public know so little about plastics and gives possible remedies for this fault.

Other articles cover the use of plastics in aeroplanes, in ships, with special reference to S.S. *Oriana*, and in the homes of today and tomorrow. Several plastics success stories are recorded, and the booklet concludes with an article on phenolic foam and its uses in building, and for 'landscapes' in some television productions.

Further information and copies of this publication can be obtained from Bakelite Ltd., 12-18 Grosvenor Gardens, S.W.1.

IRI GOLF

London Wallwork Qualifiers

THE London Section of the Institution of the Rubber Industry Golfing Society met recently at Porters Park Golf Club, Radlett.

The main competition was for the captain's prize and also served as the London section's qualifying round for the Wallwork Cup. The winner was R. McEwan with a score of 75—8: 67. The runner-up was H. Mitchell-Dawson, with 84—12: 72. The other qualifiers were H. P. Goodall 91—16: 75; D. L. Langrish-Smith 78—3: 75; C. D. L. Smith 91—16: 75; R. Bassett 94—18: 76; R. K. Valentine 92—16: 76; J. A. Forbes 84—8: 76; H. H. Marshall 90—14: 76; A. Loudon 83—7: 76; C. N. Weller 97—20: 77; E. Ellery 86—8: 78; A. Smales 91—13: 78.

As the London section's captain, D. Davies, and the Wallwork Cup holder, L. B. MacQueen, do not have to qualify, the London section's representation at Gleneagles on June 10-12 will be probably 15 strong.

Resin Cure Report

An amendment has just been made to the report on the assessment of cure of resins by sub-committee 2 of the Ministry of Aviation. This was published in full in *RPW* January 28.

It has been decided to delete paragraph (g) of Appendix 5 (*RPW* January 28, 148) and replace it with the following paragraph.

(g) Mineral fillers as additives to the resin and particularly to the gel coat should be used with great caution. In the former case they may lead to deterioration if used to excess, and in the case of gel coats to crazing under conditions of severe exposure.

This amendment has been made, following representations to the sub-committee, to avoid ambiguity.

Marleyrail vinyl handrail and Marley tiles were used extensively in this new hall at the National Physical Laboratory at Teddington

TRADE MARKS

Objections to the registration of any of the undermentioned applications may be lodged with the Comptroller-General of Patents, Designs and Trade Marks at the Patent Office, 25 Southampton Buildings, Chancery Lane, London, W.C.2, within one month of the date mentioned. The objections must be stated on Trade Marks Form No. 7, cost £2, obtainable through any money order office. The extracts—from 'The Trade Marks Journal'—given below are reproduced by permission of the Controller of H.M. Stationery Office.

Carthane (809,806). Synthetic resins for use in the manufacture of plastics. The Carwin Co., Stiles Lane, North Haven, State of Connecticut, USA. (Class 1; April 5 1961.)

Dupoxy (811,360). Synthetic resins and chemical products containing resins, all being goods for industrial use; and adhesives included in Class 1. Dussek Bitumen and Taroleum Ltd., Empress Wharf, Bromley-by-Bow, London, E.3. (Class 1; April 5 1961.)

(806,629). Licence holders made of plastics. F. J. Davis (Motor Accessories) Ltd., Romeyn Works, Romeyn Road, Streatham, London, S.W.16. (Class 20; April 5 1961.)

Regal (804,425). Carbon black for use as a pigment. Godfrey L. Cabot Inc., 125 High Street, Boston, State of Massachusetts, USA. (Class 2; April 5 1961.)

Parapipe (804,912). Pipes and tubes, and fittings, for the aforementioned goods, all included in Class 17 and made of plastics. Paragon Plastics Ltd., Cross Bank, Balby, Doncaster. (Class 17; April 5 1961.)

Paraval (804,913). Manually-operated valves made wholly or principally of plastics. Paragon Plastics Ltd., Cross Bank, Balby, Doncaster. (Class 17; April 5 1961.)

Resistolite (B810,347). Material in sheet form made of plastics, and articles made wholly or principally of plastics, all being goods in Class 17. The Wall Paper Manufacturers Ltd., 42 King Street West, Manchester, 3. (Class 17; April 5 1961.)

Dupoxy (811,362). Plastics included in Class 17; materials for hermetically sealing, packing (jointing), stopping or insulating. Dussek Bitumen and Taroleum Ltd., Empress Wharf, Bromley-by-Bow, London, E.3. (Class 17; April 5 1961.)

Bip (811,039). Closures made of plastics for bags for wrapping and packaging purposes. The Darton Manufacturing Co. Ltd., Huddersfield Road, Darton, near Barnsley, County of York. (Class 20; April 5 1961.)

Tek (811,040). Devices made of plastics and included in Class 20, for use as closures for bags, for wrapping and packaging purposes, and for use in securing and binding articles. The Darton Manufacturing Co. Ltd., Huddersfield Road, Darton, near Barnsley, County of York. (Class 20; April 5 1961.)

Saran (B809,892). Films of thermoplastics included in Class 17 for use in manufactures. The Dow Chemical Co., City of Midland, State of Michigan, USA. Address for service is c/o W. P. Thompson and Co., 12 Church Street, Liverpool, 1. (Class 17; March 15 1961.)

Dyna-Foam (806,080). Foamed plastics in sheet form for use in wrapping and packaging. The British Xylonite Co. Ltd., Highams Park, London, E.4. (Class 1; April 12 1961.)

Aeroflex (811,758). Upholstery fabrics being textile piece goods coated with plastics. Bernard Wardle (Everflex) Ltd., Peblig Mill, Caernarvon, North Wales. (Class 22; April 12 1961.)

Latest Wills

John Kay, of The Grange, 32 Clifton Drive, Lytham, Lytham St. Annes, Lancs., chairman of Sam Kay and Co. Ltd., leather distributors, rubber manufacturers, etc., Bury, who died on March 4 1961, aged 83 years, left £38,426 net value.

NEW COMPANIES

Waddington and International Paper Ltd. (687,839). March 24. Capital: £100 in £1 shares. To carry on the business of manufacturers of, and dealers in, cardboard, paper, board, plastics, polythene or other containers, and machinery and equipment used in the manufacture thereof, and to fill such containers with all manner of liquid or solid substances, etc. The first directors will be appointed by the subscribers.

Ardmay Woodcraft Ltd. (690,069). April 18. Capital: £2,500 in £1 shares. To carry on the business of woodworking machinists, wood, metal and plastics workers and finishers, furniture and fancy goods, manufacturers, etc. The directors are: Ethel Davies, 164 Northfield Road, Kings Norton, Birmingham, 30; Leslie B. Woodcock, 173 Tessall Lane, Northfield, Birmingham, 31. Regd. office: 113 St. Vincent Street, Birmingham, 16.

Tetrosyl Plastics Ltd. (689,945). April 17. Capital: £100 in £1 shares. The first directors are: Clifford Schofield and Jean Schofield, 8 Stand Avenue, Whitefield, Manchester. Regd. office: Hope Mill, Water Street, Radcliffe, Manchester.

Staley AG (F.5020). October 1960. To participate in industrial and commercial enterprises; to manufacture, export and import chemical products and products derived from synthetic and emulsion resins, polymers and related products, etc. British address: Progress House, 10 Snow Hill, E.C.1. Terence M. Lane, of Baker, McKenzie and Hightower, 7/8 Norfolk Street, W.C.2, is authorized to accept service of process and notices.

Technomould Ltd. (689,519). April 11. Capital: £1,000 in £1 shares. To carry on the business of manufacturers of, and dealers in, plastics substances, etc. The first directors are: Jeno Zollman, 11 West End Court, Priory Road, N.W.4; Endre Edinger, 11 West End Court, Priory Road, N.W.4; Zoltan Geczy, 40 Compayne Gardens, N.W.6. Regd. office: 3 Oxford Street, W.1.

H. D. Simpson and Co. (Polishers) Ltd. (689,661). April 13. Capital: £600 in £1 shares. To carry on the business of polishers of metal, plastics, synthetic substances and compositions, etc. The directors are: Harold D. Simpson and Mrs Joan B. Simpson, both of 16 Farm Road, Smethwick. Regd. office: 28 Island Road, Handsworth, Birmingham.

Plastic Reprocessing Ltd. (689,711). April 13. Capital: £2,000 in £1 shares. The first directors are: David W. R. Harriman, 27 Southville Road, Thames Ditton, Surrey; Ronald W. May, 3 Lancaster Court, Hove, Sussex. Regd. office: Elmwood Avenue, Feltham, Middlesex.

R.A. Plastic Decorations Ltd. (689,743). April 13. Capital: £1,000 in £1 shares. The first directors are: Robert F. Amos and Nina E. Amos, both of 13 Beaconsfield Villas, Brighton. Regd. office: 6 Rose Hill, Brighton.

Heron Plastics Ltd. (690,538). April 24. Capital: £1,000 in £1 shares. To carry on the business of manufacturers of, and dealers in, plastics substances, etc. The first directors are: Eric E. Bishop, 31a Cathcart Road, S.W.10; Deric J. Bishop, 77 Grangehill Road, S.E.9. Regd. office: 3/4 Clements Inn, Strand, W.C.2.

Increases of Capital

Ward End Tyre Service Ltd. (689,315). April 10. Capital: £1,500 in £1 shares. The directors are: Robert G. Harrison and Kathleen L. Harrison, both of 'Farraway', Vicarage Lane, Water Orton, near Birmingham; Anthony P. Harrison, 'Shambles', Vicarage Lane, Water Orton, near Birmingham. Regd. office: 712/4 Washwood Heath Road, Ward End, Birmingham, 8.

Walstan Ltd. (689,314). April 10. Capital: £1,000 in £1 shares. To carry on the business of manufacturers of, and dealers in, plastics moulds, boot and shoe components, etc. The directors are: Walter S. Snow, 10 Upper Church Street, Syston, Leics.; Cyril L. Barnett, 108 Davenport Road, Leicester. Regd. office: Crown Works, 90 Leicester Road, Syston, Leics.

Hall Forster and Co. Ltd. (98,565). wholesale druggists, sundriesmen and rubber merchants, etc., Peel Buildings, Temple Street, Newcastle upon Tyne, 1. Increased on July 20 1960, by £40,000 in £1 ordinary shares, beyond the registered capital of £60,000.

CLASSIFIED ADVERTISEMENTS

RUBBER AND PLASTICS WEEKLY

NATIONAL COLLEGE OF RUBBER TECHNOLOGY
Holloway, London, N.7.

The Governors invite immediate applications for the following teaching appointments, which provide opportunities for personal and team research:—

(a) LECTURER IN POLYMER CHEMISTRY. Applicants should hold a First or Second Class Honours Degree of a United Kingdom University and have a special interest in physical chemistry. Experience with polymers desirable, but not essential. Personal research expected for which facilities are available. Salary scale—£1,421 x £35 x £1,561 x £40 x £1,601.

(b) INSTRUCTOR IN POLYMER CHEMISTRY. Applicants should be Graduates or hold the Higher National Certificate in Chemistry. Duties will involve demonstrating and teaching in a laboratory devoted to polymer chemistry. Salary scale—£751 x £27 10s. x £1,163 10s. x £37 10s. x £1,201 plus allowance for degree, etc. Commencing salary according to qualifications and experience.

(c) LECTURER IN POLYMER CHEMISTRY. Applicants should hold a degree or equivalent technological qualification and have had works experience in the technology of plastics and rubbers. Salary scale—£1,421 x £35 x £1,561 x £40 x £1,601.

(d) INSTRUCTOR IN LIGHT ENGINEERING. Applicants should be trained demonstrators of light machine tools, with knowledge of instruments, preferably as used in rubber and plastic industry. Salary scale—£751 x £27 10s. x £1,163 10s. x £37 10s. x £1,201 plus allowance for degree, etc. Commencing salary according to qualifications and experience.

(e) SENIOR LECTURER IN ENGINEERING. Applicants should be qualified engineers with personality and experience to introduce an engineering bias and ability to plan courses and organise equipment for new laboratories. Salary scale—£1,601 x £50 x £1,801.

Apply, stating post in which interested, for application form and further particulars.—B. H. CURRELL, F.C.A., Clerk. (1059)

APPOINTMENTS VACANT

6d. a word. Minimum 12/6 Box 2/-

A TECHNOLOGIST is required for a senior position in the Technical Department of a leading Rubber Company. The selected candidate will head a team responsible for the compounding of rubber and plastics for a wide range of products manufactured for the engineering industries. Compound development and technical control of production mixes together with associated process are the responsibility of the team. Candidates shall be not less than 30 years of age, have had a minimum of 5 years' experience of compounding in a production unit, and hold a degree and/or other recognised qualification. An attractive salary will be paid to a man with a progressive outlook. All applications will be treated in the strictest confidence.—Apply Box 1055. (1055)

APPOINTMENTS VACANT

P. B. COW (PLASTICS) LIMITED

Applications are invited for the following positions within P. B. Cow (Plastics) Limited:—

Product Development Technicians for the extrusion and general fabrication departments.

Successful applicants should have an ability to solve technical and development problems associated with plastic extrusion production. Basic technical training up to Intermediate Degree standard is required and keenness, a practical outlook, some engineering aptitude and a sound practical knowledge of extrusion and fabrication of the following materials, i.e., flexible PVC, rigid PVC and Polyethylenes are essential.

The development work will be divided between the following fields:—

(a) Bottle blowing.
(b) General extrusion.
(c) Evaluation of new materials and products.
(d) Refrigerator gasket productions.

The positions will carry excellent prospects of progressing to management level and a salary in the region of £1,200 per annum.

Applications in confidence to:—

P. B. Cow (Plastics) Limited,
Falmouth Road,
Trading Estate,
Slough, Bucks.

Marked for attention of Technical Director.

(1038)

ASSISTANT chief chemist. Applications are invited from experienced chemists with a good knowledge of rubber and plastics technology.—Apply giving details of age, experience, qualifications, salary, etc., to Personnel Manager, Fireproof Tanks Ltd., The Airport, Portsmouth, Hants. (1069)

STAFF APPOINTMENT

DESIGNER AND FITTER ENGINEER OF HOSE COUPLINGS

A vacancy exists for a new staff appointment with an old-established and progressive rubber hose manufacturer in Hertfordshire as a fitter engineer for designing and supervising the assembling of low pressure and high pressure cotton and wire braided hose couplings, and other hose fitting work.

Excellent prospects for staff promotion.

Age between 30 and 40 years. Previous experience very necessary.—Box 966. (966)

LARKHILL RUBBER COMPANY

subsidiary of C. & J. Clark Ltd., (Shoemakers,) Street, Somerset,

require an

ADHESIVE CHEMIST

who should eventually become Technical Manager of their growing adhesives business, which supplies the Parent Company and the shoe trade in general.

Experience in a similar field is desirable and a degree would be an advantage. Age 27 to 35 years.

Salary range £1,000 to £1,500 dependent experience.

Applications should be made to the Senior Personnel Officer, C. & J. Clark Ltd., Street, Somerset, quoting ref. JT: RJ: AC. (1068)

ANALYTICAL ASSISTANT

A Young Man with at least G.C.E. 'A' level chemistry or O.N.C. is required for the analytical department of the control laboratory of a rapidly expanding chemical company in N.W. London.

Starting salary will be approximately £700 per annum depending on qualifications and experience.

Excellent prospects for ambitious young man capable of improving his technical knowledge.

Applications giving full details of age, qualifications and present salary should be sent in confidence to Personnel Manager—Box 1063 (1063)

APPOINTMENTS VACANT

RUBBER IMPROVEMENT LIMITED

require

SENIOR THERMO-PLASTICS TECHNOLOGISTS

with considerable industrial experience and/or API or equivalent qualifications.

Applicants should possess sound knowledge of PVC Sheeting and Extrusions processes, and preferably of the Extrusion of Polystyrene sheet.

Salary commensurate with experience. Excellent prospects. Superannuation scheme, etc.

Write giving full details of past experience and qualifications to:

The Administrative Officer,
Rilex Works,
Wellingborough.

(1070)

FOREMAN: RUBBER ROLLER COVERING

Foreman required. Fully experienced in handling natural and synthetic rubber coverings. Good disciplinarian. Staff position with superannuation.—Apply in writing giving full details of experience and salary required to Personnel Officer, David Moseley and Sons Ltd., Chapelfield Works, Ardwick, Manchester. (1066)

POLYMER CHEMIST

An internationally known organisation in the North West of England invites applications to fill a vacancy for a Senior Chemist, who will take charge of a new Section which will focus chemical problems thrown up by intensive development programmes connected with the Plastics and Rubber Industries. The ideal applicant would be about 30 years of age, well qualified and with a background of experience in polymer research chemistry. He should also have good personal qualities of leadership, and a knowledge of the use of instrumental analysis would be useful. Starting salary will be according to qualifications and experience.—Please send full details in confidence to Box 1062. (1062)

APPOINTMENTS VACANT (continued)

PLASTIC extrusion. Wanted by company in Southern Ireland, man to take charge of production. Experience of injection moulding an advantage.—State full particulars and salary required to Box 1047. (1047)

WANTED. Plant draughtsman for rubber factory in the Northampton area. Applicants must have sound general engineering knowledge and experience in a similar capacity would be an advantage. Salary £850-£1,000 per annum.—Reply stating full details to Long and Hambly Ltd., Great Billing, Northampton. (1053)

This column can be YOUR best BUYER or SELLER

RUBBER & PLASTICS

MACHINERY

Why not see for YOURSELF

MACHINERY FOR SALE

6d. a word, Minimum 12/6 Box 2/-

BRIDGE 60in. x 22in. mill with 100 h.p. drive. 30in. x 24in. and 21in. single geared cracker with 200 h.p. drive. 8½in. Royle extruder with 120/40 h.p. drive. Shaw 48in. x 18in. 3-bowl calender with 30/15 h.p. drive. Several 42in. mills.—Reed Brothers (Engineering) Ltd. (Receiver and Manager—Mr. C. E. M. Hardie), Woolwich Industrial Estate, London, S.E.18. Tel. Woolwich 7611. (1065)

'COTSWOLD' dipping machines and circulating tanks for latex and PVC. New catalogues now available on request.—Lionel Hook and Sons, Ebley, Stroud, Glos. Tel.: Stonehouse 614/5. (380R)

COVENTRY Climax forklift trucks! A choice selection of electric, petrol and diesel models. From 1,500lbs. to 4,000lbs. capacity. 9ft. to 14ft. lifts.—Full details, photographs and prices from Speed Electrics, Dept. RJ, Church Street, Basford, Nottingham. Tel. 75716. (1071)

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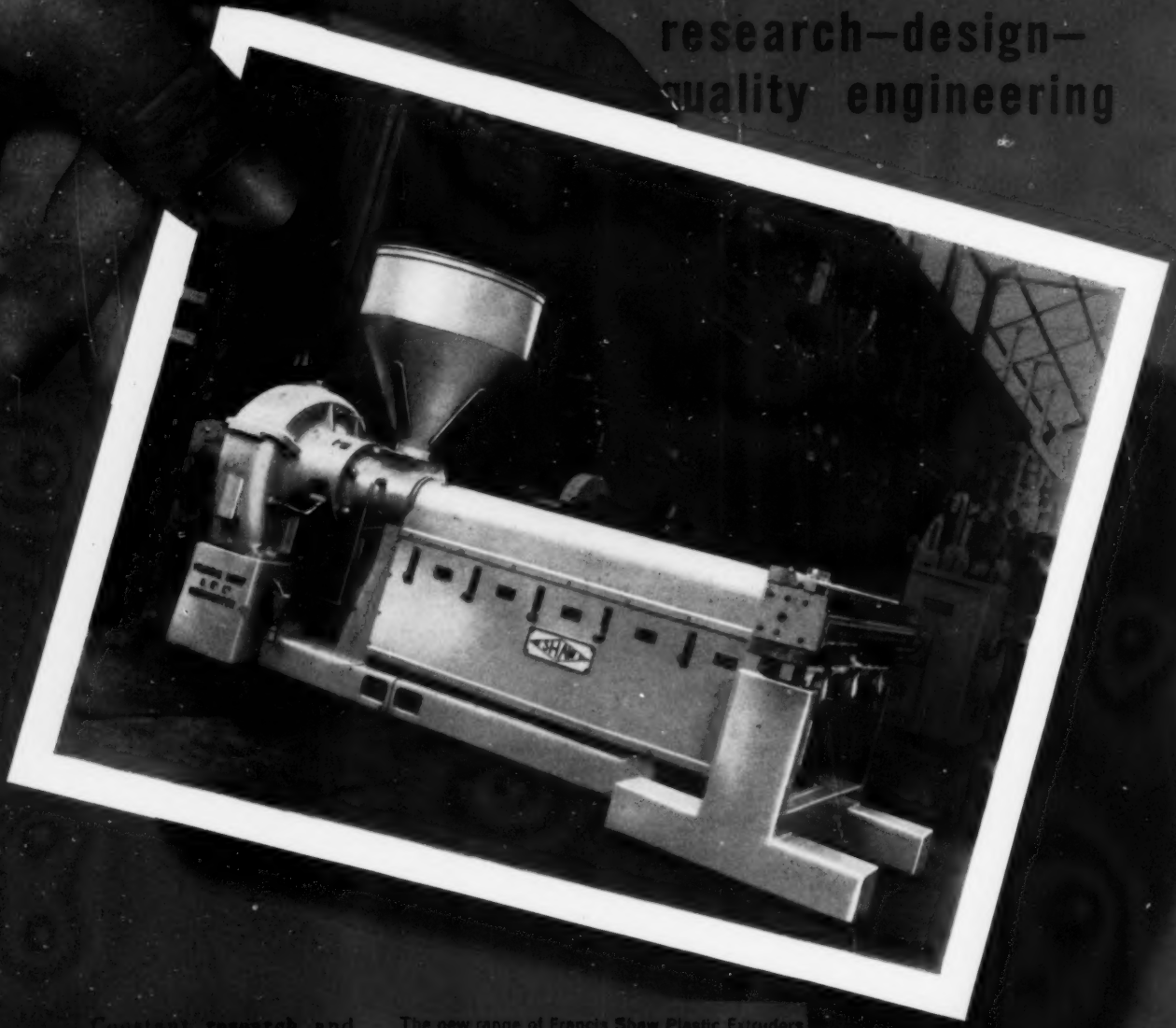

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